

**How to Measure State Self-Control in University Students with Substance Abuse
Problems? - An Interview Study**

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Abstract

Introduction. Among university students, substance consumption is increasing. Investigating factors contributing to this, the role of self-control must be considered, since consuming substances is related to lower self-control, even though students' academic achievement is associated with high self-control. While research focuses on trait self-control, state self-control might provide an explanation for these contradictory findings.

Objective. This study aims at exploring how students who are dissatisfied with their substance consumption conceptualise self-control, as well as how they perceive the usability and face validity of the state self-control items.

Methods. A qualitative, two-part interview study was conducted. The sample consisted of five students. Part A comprised a semi-structured interview about self-control, which was analysed utilising thematic analysis. Part B was a structured interview assessing the usability and face validity of the state self-control items. All participants' responses investigating the usability and face validity of the items were compared per item.

Results. The participants conceptualised self-control as a trait allowing them to inhibit undesirable impulses in social interactions and their consumption behaviour. In the academic domain, they highlight the importance of goal-directed self-control. Furthermore, the state self-control items were perceived as high in usability. However, the participants criticised the lack of specificity concerning the items' phrasing.

Discussion and conclusion. As this study showed, the concept of state self-control is still underrepresented in conceptualising self-control as a whole, which highlights the need for more awareness regarding this topic. Therefore, a first step could be to investigate the psychometric properties of the state self-control items, thereby working towards the use of validated measurement tools of state self-control. Furthermore, the face validity of the items measuring inhibitory self-control and goal-directed self-control was perceived as high, whereas the face validity of items measuring ego depletion was evaluated as low.

Keywords: state self-control, university students, substance consumption

Introduction

In contemporary Western society, substance consumption of various kinds is constantly on the rise (Matthews, 2019). Even though this trend can be seen in society as a whole, some subpopulations are especially at risk of developing habits of substance use or even substance abuse disorders. University students can be identified as one of those populations (Walters et al., 2018). More specifically, multiple studies have provided evidence that, among college students, the percentage of individuals who frequently consume substances like alcohol or marijuana is significantly higher compared to age-group peers not affiliated with the academic sector (Ford & Blumenstein, 2013). As research shows, heightened alcohol consumption can cause a range of physical, mental, and cognitive impairments like depression, changes in brain function, and physical injuries (White & Hingson, 2013). This highlights the need to inquire about the causes and maintaining factors of the high substance consumption among university students.

Investigating the students' substance consumption and factors possibly influencing it, their relationship with self-control should be taken into account, as abusive substance consumption was found to be related to lower capacities in self-control (Ford & Blumenstein, 2013). More specifically, self-control is a constant to be found in our daily lives. It has been defined as "the ability to alter one's thoughts, emotions and behaviours or to override impulses and habits" (Maranges & Baumeister, 2016, p. 42). Concretely, it enables individuals to behave and perform in accordance with societal and moral expectations as well as to attain personal goals (Baumeister et al., 2007).

Taking a closer look at the students' professional life, they can be characterised as one of the most highly educated groups of individuals in society. Research suggests that high academic achievement correlates with higher capacities in self-control, indicating that university students should generally be high in self-control (Duckworth et al., 2019). However, consuming substances, which is a highly prevalent behaviour among university

students, was found to be linked to lower self-control (Ford & Blumenstein, 2013). It can thus be concluded that the research discussed implies university students being both high and low in self-control. This undermines the complexity of the relationship between self-control, academic achievement and substance abuse. To understand the specifics of the interplay thereof, further enquiry is needed. Valuable insights could, for instance, be acquired by exploring students' conceptualisations and associations with self-control. More specifically, this might generate a greater understanding of the role self-control plays in their lives and various aspects of it (i.e., substance consumption, academic life etc.).

One aspect that might play a role of importance in the 'triad' of studying, substance consumption, and self-control is the underrepresented distinction between trait self-control and state self-control. Trait self-control refers to the individual disposition towards self-control. It can be considered a consistent component of an individual's personality (Cheung et al., 2014). Trait self-control thus covers the intrapersonal dimension of self-control, while state self-control concerns the dimension susceptible to fluctuations across different contexts. More specifically, self-control is influenced by external and situational factors such as fatigue and exhaustion, and can, thus, fluctuate throughout the day. This suggests that not only general dispositions but also everyday-life factors, for instance, academic performance pressure, might influence the substance consumption of students, by diminishing their resistance towards maladaptive coping strategies like drinking alcohol.

A possible explanation for the aforementioned fluctuations in self-control can be found in the *Strength Model of Self-Control* by Baumeister (1998). Said model characterises self-control as a limited resource, similar to a muscle that gets overused. Hence, once self-control is depleted, the affected individual will suffer a lack thereof, which can lead to impulsive and inconsiderate actions (e.g., substance abuse or risky sexual behaviour), as well as to an impaired capacity to act purposefully on certain behavioural tasks. This state of lacking capacity for state self-control has been termed *ego depletion* (Baumeister et al., 1998).

However, the process of exerting self-control and reaching ego depletion can be prolonged by regularly training the ‘muscle of self-control’ (Hagger et al., 2010). Concerning the population of university students, this state of ego depletion might contribute to substance abuse problems, since high-stress levels and workloads might facilitate the emergence of ego depletion in students, thereby making them less determined to resist the urge to consume substances. This, in turn, highlights the importance of taking situational factors and the concept of state self-control into account.

Despite the relevance of state self-control in the general concept of self-control, existing self-control research (relating to substance abuse) mostly focuses on trait self-control, rather than context-dependent fluctuations thereof (de Ridder et al., 2012). However, as elaborated on, self-control is a multifaceted concept, which exacerbates its measurement in a comprehensive, valid, and reliable way. Trait self-control can be measured rather easily since corresponding scales aim to assess a disposition relatively consistent over time. Commonly used in the field of trait self-control research are the *Self-Control Scale* (SCS; Tangney et al., 2004) and the short version thereof, the *Brief Self-Control Scale* (BSCS; Tangney et al., 2004). Both scales are described to be high in reliability and validity (Brevers et al., 2017). In contrast to this, state self-control is more difficult to capture by fixed measurement tools as it varies vastly across different contexts and time frames (de Ridder et al., 2012). This can also be seen in the lack of scientifically tested, reliable and valid scales comprehensively measuring state self-control.

Attempting to target the underrepresentation of state self-control in current research, the study of Bagala et al. (2021) aimed at creating items measuring state self-control. However, this study was conducted in the scope of a bachelor’s assignment and is, thus, neither published nor peer-reviewed. Nevertheless, the items might function as a basis for further scientific insight in this field, even though their (face) validity and overall usability have not been thoroughly investigated yet. By utilising the Experience Sampling Method

(ESM), Bagala et al. (2021) gained insight into the daily, fluctuating state self-control of their participants. On this basis, the state self-control items have been developed (Bagala et al., 2021), but, as mentioned, no further information about the psychometric properties of said items is available yet. A psychometrically sound measurement tool could, for instance, provide the means for investigating the interrelation between state self-control, substance consumption and academic performance. This, in turn, might be an initial step towards gaining more insight into the high substance abuse prevalence in university students and maintaining factors thereof. For this reason, the study at hand will explore the face validity and usability of the state self-control items by Bagala et al. (2021). Additionally, university students' associations, as well as their conceptualisations of self-control could likely provide meaningful insights into their relationship with self-control as a general concept, substance consumption, as well as the role of state self-control in their lives. Therefore, the following research questions have been established:

Research question 1: *How do university students who are dissatisfied with their substance consumption conceptualise self-control?*

Research question 2: *What is the experienced face validity and usability of the state self-control items by Bagala et al. (2021) according to university students who are dissatisfied with their substance consumption?*

Methods

Participants

The study at hand was conducted from November to December 2021 at the University of Twente in the Netherlands. It focused on university students who were dissatisfied with their substance consumption. To be included in the study, all participants needed to be enrolled in a university or HBO program (BSc or MSc) at the time of the interview. To avoid language bias, only native German speakers (level C1 or higher) were recruited. All underage

individuals and individuals who did not explicitly consent were excluded from the study. To recruit suitable participants, a snowballing strategy was used. Acquaintances of the researcher were asked if they feel dissatisfied with their substance consumption or know other individuals matching those criteria. Those who indicated their interest were contacted via email and provided with general information about the study and a consent form. In total, 5 participants were recruited. Two of them identified as female, while three identified as male. Their ages ranged from 21 to 24. At the time of the interviews, all participants were enrolled in the bachelor's program in Psychology at the University of Twente.

Materials

The interview scheme used in this study consisted of two parts, in which each of the participants took part. Part A (see Appendix A) was an interview with open-ended questions that aimed at inquiring about students' general conceptualisation of self-control and their automatic associations with it, to gain an overall picture of their relationship with self-control (RQ1). This part of the interview consisted of an initial question investigating the participants' associations and mental images regarding self-control. Followingly, there were five probing questions the interviewer could administer depending on the course of the interview. The probing questions were aimed at inquiring about the participants' perception of self-control (e.g., in which areas of life the participant considered self-control to be important). Lastly, each participant was asked if they have any additional thoughts or remarks about the concept of self-control.

Part B (see Appendix A) was a semi-structured interview scheme aiming at assessing the face validity and usability of the state self-control items (see Table 1, RQ2). The seven items were subdivided into three themes. Items 1 to 3 were designed to measure *ego depletion*, items 4 and 5 measure *goal-directed self-control* and item 5 to 7 assess *inhibitory self-control*. All items could be answered on a Likert-Scale ranging from 0 (not at all) to 5 (very much) (Bagala, 2021).

Table 1*State self-control items (Bagala et al., 2021)*

	Construct	Item
Self-Control	Ego Depletion	1. “In the past couple of hours, have you felt that it is hard to make up your mind about even simple things?”*
		2. “In the past couple of hours, have you felt that things are bothering you more than they usually would?”*
		3. “In the past couple of hours, have you felt that you have less mental and emotional energy than you normally have?”*
Self-Control	Goal-directed	4. “In the past couple of hours, how easy was it for you to do something “good” that you did not really want to do (e.g., eating healthy food)?”
		5. “In the past couple of hours, were you able to stick to your goals?”
Self-Control	Inhibitory Self-Control	6. “In the past couple of hours, how easy was it for you to refrain from doing something “bad” you really wanted to do (e.g., snacking)?”
		7. “In the past couple of hours, were you able to resist temptations?”

Note. *Items with reversed scoring

To assess the previously presented items (see Table 1) concerning their face validity and usability, nine questions have been developed in the course of this study. More

specifically, each of those questions is based on Willis' method of cognitive interviewing (1999), focusing on several constructs such as comprehensibility, recallability, and associations. Each question was asked for every item of the state self-control items.

Table 2

Themes derived from the nine assessment questions

Item	Question	Theme
1	“How would you answer this question?”	Comprehensibility
2	“Can you repeat the question in your own words?”	Reproducibility
3	“What is the first thing that comes to mind when you read this question?”	Automatic associations
4	“What do you think this question is about?”	Construct measurement
5	“Is the wording/phrasing clear to you?”	Phrasing
6	“Do you find this question difficult to answer? If yes, to what extent?”	Level of difficulty
7	“Is there something you would change about this question? If yes, what?”	Need for change
8	“Do you suggest any other questions?”	Additional input
9	“Do you have any additional thoughts about any or all of the questions?”	Additional input

Procedure

Ethical approval for this study has been granted by the ethics committee from the University of Twente (approval number: 211380). Firstly, a pilot test with a volunteer has been conducted to assess the approximate duration of the interview (i.e., 19 minutes and 48 seconds). The course of the pilot interview was unproblematic and fluid. However, based on the volunteer's experiences, some minor changes were implemented in the introductory text.

Possible language biases were minimised by employing back- and forward-translating by two independent researchers (see Appendices A and B). As the discrepancy between the re-translated and the original material was minimal, no further modification took place. Two participants decided to be interviewed via videoconferencing (Zoom) due to the COVID-19 pandemic, while three participants preferred to be interviewed in person. Each participant was sent a consent form and a sheet to fill in their demographics, as well as to indicate if they are satisfied with their substance consumption.

Data Analysis

After discussing and resolving minor translation discrepancies, the transcripts were anonymised and uploaded to Atlas.ti 9. Considering part A of this study as exploratory in nature, all data of this part of the study has been analysed utilising inductive coding. Thematic analysis according to Clarke et al. (2015) was used. Initially, one researcher explored one transcript concerning themes relating to the participants' conceptualisation of self-control. Thereby, a preliminary coding scheme, including themes and their corresponding definitions, was developed. Followingly, this scheme was used to code the remaining transcripts, while constantly being refined. To assess the reliability of the coding scheme, the same transcript was additionally coded by another researcher. The inter-coder agreement was found to be 87.5%. As research indicates, a score of 80% inter-coder agreement and higher can be considered acceptable (O'Connor & Joffe, 2020). On this basis, no further alterations to the coding scheme were executed and the remaining interviews were coded.

Part B of the study was analysed by employing a deductive coding approach to assess the face validity and usability of the existing state self-control items. A coding scheme has been established based on the nine assessment questions (see Table 2). Therein, each state self-control item was paired with a number functioning as the main theme (e.g. “*In the past couple of hours, have you felt that it is hard to make up your mind about even simple things?*” equals the main theme 1). Then, for each item, the aforementioned sub-themes such as comprehensibility are applied, e.g. “*How would you answer this question?*”. Afterwards, the coding scheme was administered to the data in Atlas.ti by applying the themes to the corresponding text passages. Followingly, the marked text passages were compared per item. More specifically, to assess the face validity of each item, the themes of *automatic associations* and *construct* were regarded. The usability was investigated utilising the remaining themes (*comprehensibility, reproducibility, phrasing, level of difficulty, and need for change*). Lastly, the theme *additional input* was analysed separately.

Results

This study aims at investigating how university students who are dissatisfied with their substance consumption conceptualise self-control and how they perceive the face validity, as well as the usability of the state self-control items. To structure this section, the results of part A and part B of the interview will be presented in subsequent sections.

Section A: Self-control conceptualisations of students dissatisfied with their substance consumption

In the process of developing the coding scheme, themes with two different levels of abstraction have been identified. Concretely, two overarching themes that have been found are presented in Table 3, while seven less abstract themes can be found in Table 4. Furthermore, a number of less abstract themes show substantial overlap with one of the overarching themes. These co-occurrences are thematised in the discussion section.

Table 3

Overarching themes in the self-control conceptualisations of university students who are dissatisfied with their substance consumption

Theme	Definition	Interview occurrences (N = 5)	Total occurrences
Inhibitory self-control	Actions aiming at controlling impulses and containing oneself to prevent undesirable outcomes	5	22
Goal-directed self-control	Exerting self-control to proactively achieve, or work towards something desirable	4	12

Table 4

Themes in the self-control conceptualisations of university students who are dissatisfied with their substance consumption

Theme	Definition	Interview occurrences (N = 5)	Total occurrences
Regulating professional demands	Exerting self-control to manage the demands related to one's professional life, including one's academic and occupational career	5	17

Theme	Definition	Interview	Total
		occurrences (N = 5)	occurrences
Interpersonal functioning	Exerting self-control to regulate social and professional relationships	5	13
Self-care	Exerting self-control to take care of the self physically, as well as psychologically (e.g., doing sports)	4	9
Everyday-life functioning	Exerting self-control to manage and regulate one's daily life (e.g., completing chores)	2	5
Substance consumption	Exerting self-control to regulate one's alcohol and drug consumption	3	3
Self-control as muscle	The notion that self-control functions similarly to a muscle that can be trained by repeated exertion	1	1

Theme	Definition	Interview occurrences (N = 5)	Total occurrences
Situational factors	Emotional, physical, and external factors that influence one's capacity for exerting self-control (e.g., fatigue)	1	1

Inhibitory self-control

Inhibitory self-control seems to be the most salient and strongly associated theme with regard to self-control. Inhibitory self-control refers to actions aiming at controlling impulses and containing oneself to prevent undesirable outcomes. It was repeatedly mentioned by all participants and identified in various contexts. Most participants referred to this theme in the field of social relationships. Participant 5 elaborated: “*I think, for me, self-control is just that I don't act out of affect, that when I'm angry I don't just say or do something mean, but I'm aware beforehand of the consequences my behaviour could have (...)*”. However, other participants also discussed inhibitory self-control regarding their consumption behaviour of substances and food.

Goal-directed self-control

Followingly, *goal-directed self-control* refers to exerting self-control in order to proactively achieve or work towards something desirable. It was solely mentioned in the context of university-related tasks and thus shows substantial overlap with the theme of *regulating professional demands*. Though, *goal-directed self-control* itself incorporates a wider field of contexts such as exerting self-control to master non-academic skills (e.g., learning an instrument).

Regulating professional demands

The second theme is *regulating professional demands*. It refers to exerting self-control to manage the demands related to one's professional life, including one's academic and occupational career, as well as tasks thereof. This theme was mainly identified in the context of university-related activities. Participant 5 described their struggle maintaining attention while working on university assignments and learning: "*Well, I think I have to control myself the most at university, I'm the most distracted person, I have terrible concentration problems*". However, *regulating professional demands* were also identified in the context of procrastination and struggling with one's motivation in general.

Interpersonal functioning

Furthermore, *interpersonal functioning* is defined as exerting self-control in order to regulate social and professional relationships. The theme was solely mentioned concerning maintaining positive interpersonal relationships. Participant 4 elaborated on this as follows: "*Especially in social situations, because if you only react according to your impulses the whole time and don't consider how people react to situations, then I think social interactions would not work so well*".

Self-care

The theme *self-care* is defined as exerting self-control in order to take care of the self physically, as well as psychologically (e.g., doing sports). *Self-care* was mostly mentioned in the context of health and physical well-being. For instance, participant 3 talked about self-control in relation to preserving one's physical health by refraining from unhealthy habits, which is illustrated by the following quote: "*Yes... if you don't control yourself, that (...) has negative consequences. For example, if someone has lung cancer and the doctor tells you to stop smoking now. And if you don't do that, it definitely has the consequence that you may experience a terrible fate*".

Everyday-life functioning

Everyday-life functioning refers to exerting self-control in order to manage and regulate one's daily life (e.g., in doing chores). It was discussed by participants 1 and 4 in similar contexts. Both regarded *everyday-life functioning* as especially important in taking care of chores and doing their daily tasks, even though they do not enjoy them.

Substance consumption

Substance consumption, which is defined as exerting self-control to regulate one's alcohol and drug consumption, was discussed by three different participants. All of them mentioned *substance consumption* in the context of trying to control themselves to refrain from consuming substances despite their availability. Participant 4, for instance, said: "*Or, on a private level, that can also happen...with substances that you take when you feel like smoking, that you somehow have the self-control to not do that, even if nothing would keep you from it*".

Situational factors

The theme of *situational factors* is defined as emotional, physical and external factors that influence one's capacity for exerting self-control (e.g., fatigue). This theme was merely discussed once by participant 5. Even though none of the other participants mentioned this theme, it appeared to be strongly connected to their conceptualisation of self-control. The participant explained that their well-being at a particular moment, and the situation they find themselves in, can influence their capacity for controlling themselves, as illustrated by the following quote: "*Yes, it's somehow easier, I'd say when you're content with your overall situation. Well, if I'm not hungry right now, it's much easier for me to control myself than if I'm hungry, I'm cold and I have a headache, then somehow (...) it's harder for me*".

Self-control as a muscle

Lastly, *self-control as a muscle* refers to the notion that self-control functions similarly to a muscle that can be trained by repeated exertion. Like the previous theme, *self-control as a*

muscle was only mentioned by participant 5 and appeared to be a meaningful component of self-control for them. They argued: “*And I just noticed that it's like a skill and you have to train it. If you've been chilling for two or three weeks now, you need to work two or three weeks to get back to that level of self-control.*”

Section B - Face validity and usability of the state self-control items

To gain meaningful insights into the face validity and usability of the items, the results of the aforementioned categories will be presented per item. An overall impression per item can be found subsequent to each table. Further, Appendix C includes a detailed description of each item and its corresponding themes.

Table 5

Results for item 1: “In the past couple of hours, have you felt that it is hard to make up your mind about even simple things?”

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	All participants were able to reproduce and rephrase the item in a logical and consistent manner.
Automatic associations	Face validity	The item was mostly associated with personal experiences in the domain of decision making and with the concept of determination. None of the participants associated the item with self-control.

Theme	Quality measured	Outcome
Construct	Face validity	The constructs the item aims at measuring (ego depletion) were partly related to self-control and identified to be impulse control, determination, and decision-making.
Phrasing	Usability	The item was overall regarded to be phrased clearly. However, the term “ <i>difficult</i> ” was perceived as subjective.
Level of difficulty	Usability	The item was considered to be difficult to answer by four participants since the words used in the item are not clearly defined.
Need for change	Usability	Four of the participants agreed to change or clearly define the terms “ <i>difficult</i> ” and “ <i>little things</i> ”.

The participants regarded item 1 to be moderate in usability due to the subjectivity of terms used. Furthermore, the face validity was found to be low as the perceived target construct of individual experiences differs substantially from the intended construct of ego depletion.

Table 6

Results for item 2: “In the past couple of hours, have you felt that things are bothering you more than they usually would?”

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	All participants were able to rephrase and reproduce the item in a logical and consistent manner.
Automatic associations	Face validity	The participants did not associate this item with the concept of self-control, but with personal experiences from the near past.
Construct	Face validity	The constructs the item aims at measuring (ego depletion) were identified to be irritability, sensitivity to external stimuli, or neuroticism. None of the participants mentioned (state self-control) in the context of this item. Participants 2 and 3 were unsure what the item was intended to measure.
Phrasing	Usability	The item was overall regarded to be phrased clearly. However, participant 2 was unsure if they considered this item clearly phrased.

Theme	Quality measured	Outcome
Level of difficulty	Usability	The item was considered to be easy to answer by three of the participants. Two participants argued that the question is posed too broadly.
Need for change	Usability	Three participants expressed that the item does not need to be modified, while one participant argued the question should be specified further since the term “ <i>things</i> ” was perceived as too broad.

The participants regarded item 2 to be moderate in usability due to the subjectivity of the term “*things*”. Similarly, the face validity is rather low, since the participants perceived the item to inquire about their personal experiences rather than about the construct of ego depletion.

Table 7

Results for item 3: “In the past couple of hours, have you felt that you have less mental and emotional energy than you normally have?” (ego depletion)

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	All participants were able to rephrase and reproduce the item in a logical and consistent manner.

Theme	Quality measured	Outcome
Automatic associations	Face validity	The participants generally associated the item with experiences from their daily lives in which they felt exhausted. Participant 2 associated the item with a declining capacity for self-control. Participant 5 was unsure about what they associated the item with.
Construct	Face validity	Four participants identified the relationship between emotional fatigue, mental fatigue and self-control to be the main constructs measured by this item. Participant 1 named conscientiousness as the main construct thereof.
Phrasing	Usability	Four participants perceived the item as clearly phrased, while participant 5 was unsure if they considered the item as clearly phrased.
Level of difficulty	Usability	Three participants considered the item to be easily answerable, while participants 2 and 3 criticised the level of abstraction regarding the terms “ <i>mental energy</i> ” and “ <i>emotional energy</i> ”.
Need for change	Usability	Four participants expressed that the item should be specified concerning the terms “ <i>mental energy</i> ” and “ <i>emotional energy</i> ”, but were not able to come up with specific suggestions. Participant 5 was content with the existing item.

The participants regarded item 3 to be rather low in usability due to the lack of explanation of the terms “*mental energy*” and “*emotional energy*”. The face validity can be described as moderate since the participants perceived the target construct to be mental fatigue, which overlaps with ego depletion to some extent.

Table 8

Results for item 4: “In the past couple of hours, how easy was it for you to do something “good” that you did not really want to do (e.g., eating healthy food)?”

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	Three participants were able to reproduce the item in a logical and consistent manner. Participants 3 and 5 expressed being unsure about how to rephrase this item since they could not remember its content.
Automatic associations	Face validity	Three participants associated this item with the general concept of self-care. Participants 1 and 3, however, associated this item with memories of situations in which they chose to do something beneficial for their well-being.

Theme	Quality measured	Outcome
Construct	Face validity	The participants identified “direct” self-control, resilience, the relationship between healthy habits and self-control, as well as the capability of overcoming laziness as the main constructs of this item (intended construct: goal-directed self-control).
Phrasing	Usability	All participants regarded the item to be phrased clearly. Participant 4, however, criticised the scarcity of examples in the item.
Level of difficulty	Usability	Four participants considered the item to be easily answerable. Participant 2 argued that some individuals might not know what is good for them.
Need for change	Usability	Four participants expressed that the item should not be modified. Participant 2 argued that the term “ <i>good</i> ” should be phrased less subjectively, since individuals’ definitions of good differ, but could not make specific suggestions.

The participants regarded item 4 to be rather high in usability since the item was perceived to be easily understandable and phrased well. Its face validity was also perceived as high as all participants identified the item to be about ‘direct’ self-control and resilience, which substantially overlaps with goal-directed self-control.

Table 9

Results for item 5: “In the past couple of hours, were you able to stick to your goals?”

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	Four participants were able to reproduce the item in a logical and consistent manner. Participant 5 expressed being unsure about how to rephrase this item since they perceived the item as too simple to rephrase in their own words.
Automatic associations	Face validity	Four participants associated this item with memories of goals they set for themselves in the recent past and how they reached them. Participant 1 associated the item with the concept of motivation and planning ahead.
Construct	Face validity	The participants unanimously identified “goal-setting” (intended construct: goal-directed self-control) as the construct measured by this item.
Phrasing	Usability	Four participants perceived the item as formulated clearly. However, participant 4 criticised the specificity of the term “goals” and argued that there are different types of goals, such as life goals and daily-life goals.

Theme	Quality measured	Outcome
Level of difficulty	Usability	Three participants considered the item to be easily answerable. Participant 2 argued that some individuals might not know what their goals are and thus struggle to answer the item. Participant 4 indicated finding the item difficult to answer since the interviewee might have not had goals in the period of time concerned.
Need for change	Usability	Three participants expressed that the item should be specified concerning the term “ <i>goals</i> ” since it was perceived as rather subjective. However, none of the participants could provide a suggestion to solve this issue.

The participants regarded item 5 to be moderate in usability since the term “*goals*” is rather unspecific. The face validity was found to be high since the participants identified goal-setting as the target construct of this item, which shows substantial overlap with goal-directed self-control.

Table 10

Results for item 6: “In the past couple of hours, how easy was it for you to refrain from doing something “bad” you really wanted to do (e.g., snacking)?”

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	All participants were able to rephrase and reproduce the item in a logical and consistent manner.
Automatic associations	Face validity	Four participants associated this item with situations in which they did not manage to refrain from snacking or consuming substances. Participant 2 identified self-control as their main association.
Construct	Face validity	Four participants identified “self-control” as the construct measured by this item. Participant 3 suggested that this item is designed to measure the conflict between wanting to do something but knowing one should not do so (intended construct: inhibitory self-control).
Phrasing	Usability	Three participants perceived this item as formulated clearly. However, participants 1 and 4 criticised the term “bad” as too subjective and broad, since its definition might vary substantially across individuals

Theme	Quality measured	Outcome
Level of difficulty	Usability	All participants perceived the item as easily answerable.
Need for change	Usability	Three participants expressed that the item does not need to be altered. Participants 1 and 4 argued that the item should be modified, wherein one of them suggested specifying the item by adding more examples for something “ <i>bad</i> ”.

The participants regarded item 6 to be moderate in usability since the term “*bad*” is rather subjective. The face validity of this item was found to be high since the participants identified controlling oneself as the construct to be measured, which substantially overlaps with inhibitory self-control.

Table 11

Results for item 7: “In the past couple of hours, were you able to resist temptations?”

Theme	Quality measured	Outcome
Comprehensibility	Usability	All participants were able to comprehend and answer the item in a logical way.
Reproducibility	Usability	All participants were able to rephrase and reproduce the item in a logical and consistent manner.

Theme	Quality measured	Outcome
Automatic associations	Face validity	The participants associated snacks, drugs and the general concept of “self-control” with this item.
Construct	Face validity	The participants identified the construct measured by this item as the capability of sustaining one’s self-control in the face of temptation (intended construct: inhibitory self-control).
Phrasing	Usability	All participants perceived the item as phrased clearly.
Level of difficulty	Usability	Three participants perceived this item as easy to answer. However, participant 1 argued that the term “temptations” is not specific enough. Participant 3 mentioned that external factors like the availability of said temptations should be taken into account.
Need for change	Usability	Four participants expressed that the item does not need to be altered. Participant 3 suggested incorporating external factors that could influence an individual’s response in the face of temptation.

The participants regarded item 7 to be rather high in usability. Similarly, the face validity of this item was found to be high, since the participants identified sustaining their self-control in the face of temptation as the target construct. This substantially overlaps with the construct of inhibitory self-control.

Additional input

After evaluating each item, all participants were asked to express any thoughts, suggestions and additional input they can provide about their impression of the presented items. Two participants did not have any further suggestions regarding the items, while three suggested moderate changes to the items. Participant 1, for example, proposed: *“Maybe you could somehow add something about impulse control or something like that. But I don't know exactly how, at the moment”*. Participant 4 concluded that they generally found the items too unspecific and subjective since multiple items contained concepts that are likely to be interpreted differently by different individuals. Lastly, participant 3 recommended including more factors like, for instance, motivation to reach specific goals: *“Maybe other scenarios could be used, like when you are feeling really bad, or like, the difference between a really good and really bad day. (...) If you are even motivated to reach your goal, or in general your attitude towards the goal. Or how motivated are you to hand something in, but didn't manage anyways? Especially when it comes to addiction stuff”*.

Discussion

In their private lives, university students conceptualise self-control as a stable, trait-like means to control undesirable impulses, especially in the context of social relationships. Concerning their academic careers, however, they perceive exerting self-control as an achievement-oriented process to help them reach their goals. The participants perceived the usability of the items as relatively high, even though they considered multiple items to be phrased subjectively, possibly leading to tentativeness among the interviewees. Furthermore, the face validity of the items was found to be rather low, since the participants perceived multiple items as not measuring any construct related to self-control. Nevertheless, none of the items was evaluated to be entirely negative.

The first central finding of the study at hand concerns the underrepresentation of state self-control in the participants' conceptualisation of self-control as a whole. As could be seen

in the interviews, their associations with the concept of self-control almost exclusively focus on self-control as a fixed trait, rather than a factor that is also dependent on external factors like ego depletion or fatigue (Baumeister et al., 1998). Similarly, the notion of ego depletion (Hagger et al., 2010) is barely embedded in the associations of the participants of this study. It can, therefore, be deduced that state self-control as a part of “overall” self-control might still not be as widely recognised and grasped as trait self-control among students. Said underrepresentation also impacted the participants’ perception of the state self-control items and their face validity. More specifically, during the interview assessing the items, it became apparent that almost all participants expected the items to measure concepts that are in line with their trait-focused conceptualisation of self-control. When presented with concepts exclusive to state self-control, such as *ego depletion* (i.e., items 1, 2 and 3), they usually expressed confusion about the item supposedly not measuring anything related to “self-control”. Therefore, the face validity of the first three items was perceived to be low. In contrast to this, items measuring *goal-directed self-control* (i.e., items 4 and 5) and especially *inhibitory self-control* (i.e., items 6 and 7) were perceived as high in face validity and a more logical and suitable measure for self-control. This can presumably be attributed to the fact that the concepts of inhibitory self-control and goal-directed self-control are commonly associated with trait self-control, which is reflected in the participants' conceptualisations of self-control to a greater extent.

Looking at the factors central to the participants’ self-control conceptualisations more closely, two main dimensions of self-control were discussed: inhibitory self-control and goal-directed self-control. Concretely, the goal-directed dimension of self-control was predominantly regarded as significant in the participants’ academic careers, while inhibitory self-control was mostly employed in their private lives. A majority of the participants expressed that when thinking about self-control, their first mental association is the inhibition of some kind of impulse to not violate societal norms or provoke interpersonal conflicts. This

is in line with the findings of Reynolds & McCrea (2019), who stated that inhibitory self-control is an important quality of our contemporary society, especially concerning the functionality of social relations and an individual's societal role. Furthermore, the participants described inhibitory self-control to be of central importance in their efforts to regulate their substance consumption.

In contrast to the inhibitory component of self-control, goal-directed self-control, which enables actively working towards the desired outcome, was also elaborately discussed by the participants. They mentioned having to exert goal-directed self-control regularly in regard to their occupation as university students, which all of them are able to do successfully, despite their substance consumption. It can thus be deduced that inhibitory self-control and goal-directed self-control might be regarded as autonomous dimensions of self-control as a whole, thereby independently influencing different domains of the participants' lives (i.e., their consumption behaviour and their academic achievement). This insight is also supported by the findings of de Ridder et al. (2011), who stated that goal-directed self-control functions as a predictor for desirable behaviour, while inhibitory self-control predicts maladaptive behaviour. Relating this to the claim that substance consumption is linked to a lower capacity of self-control in general (Ford & Blumenstein, 2013), the findings of the study at hand suggest that there should be a more specific distinction concerning the different dimensions of self-control.

Strengths and Limitations

Firstly, a strength of the study at hand is its qualitative nature, which allows for especially detailed and individual insights into the participants' conceptualisations of self-control. Compared to a quantitative approach, this allows for more nuanced insights into the interplay between substance consumption, academic achievement and self-control, as experienced by the participants. Furthermore, a significant asset of the interview scheme of part A is its flexibility with regard to the course of the interview. More specifically, depending

on the response of the participant, the interviewer is allowed to tailor and prioritise the interview questions to match the flow of the conversation. Thereby, deeper and less biased insights could be gathered. Lastly, another strength concerning part B of the interview is the use of cognitive interviewing. Cognitive interviewing, as a method in itself, provides the interviewer with a clear structure, which avoids interruptions and interfering questions, and allows for a decrease in memory bias (Memon & Higham, 1999).

However, this study has also been confronted with a range of shortcomings. Firstly, due to the ongoing COVID-19 pandemic, the participants' conceptualisations of and associations with the concept of self-control might have been biased due to the current restrictions. More specifically, the daily lives of students underwent major changes regarding working from home, the physical availability of educational facilities and changes in the attendance requirements. The fact that the participants did not have to be physically present in educational settings anymore might have diminished their use of self-control aiming at managing their time efficiently (e.g., in getting up in time or driving to campus). This, in turn, might have influenced what the students regard as fundamentally important regarding the concept of self-control. Furthermore, due to availability reasons, the sample of participants merely consisted of psychology students, which might have compromised the diversity and variety of the perspectives and thoughts gathered throughout this study.

Future Implications

Based on the process of conducting the study at hand, as well as the previously presented limitations, a range of implications for future research can be proposed. Firstly, this study should be carried out again outside of the impact of a global pandemic to correct for possible biases stemming from any restrictions on the daily lives of the participants. In addition to that, a more diverse sample should be used, since convenience sampling could compromise the representativeness thereof (Etikan et al., 2016). On this basis, the state self-control items could be reassessed on a larger number of participants, especially in a

quantitative research setting. That way, the items can be investigated concerning their psychometric properties, such as their reliability and validity. Lastly, the items should be rephrased more concisely and less subjectively.

Conclusion

University students who are dissatisfied with their substance consumption mainly conceptualise self-control as a trait-like quality. Their conceptualisations mainly consist of two dimensions of self-control, namely inhibitory self-control, and goal-directed self-control. Therein, self-inhibitory self-control mostly seems to be utilised in the context of controlling undesired impulses to maintain functional social relationships, as well as regulating substance consumption. However, taking a closer look at those conceptualisations, what stands out is the consistent underrepresentation of state self-control. This was also reflected in the perceived low face validity of the items measuring concepts related to state self-control (i.e., ego depletion) rather than trait self-control. Furthermore, the overall usability of the items was assessed to be moderate. Though all of them were comprehensible and recallable, they were perceived as rather subjective, which was evaluated as negative by the participants.

References

- Bagala, S. (2021). *Control yourself!: How are trait and state self-control related to prosociality in young adults?* [Bachelor thesis, University of Twente]
<http://purl.utwente.nl/essays/87390>
- Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, 16(6), 351–355. <https://doi.org/10.1111/j.1467-8721.2007.00534.x>
- Baumeister, R.F., Bratslavsky, E., Muraven, M., & Tice, D.M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74(5), 1252–1265. <https://doi.org/10.1037/0022-3514.74.5.1252>
- Baumeister, R.F., Heatherton, T.F., & Tice, D.M. (1994). *Losing control: How and why people fail at self-regulation*. Academic Press.
- Brevers, D., Foucart, J., Verbanck, P., & Turel, O. (2017). Examination of the validity and reliability of the French version of the Brief Self-Control Scale. *Canadian Journal of Behavioural Science / Revue Canadienne des Sciences du Comportement*, 49(4), 243–250. <https://doi.org/10.1037/cbs0000086>
- Cheung, T. T., Gillebaart, M., Kroese, F., & De Ridder, D. (2014). Why are people with high self-control happier? The effect of trait self-control on happiness as mediated by regulatory focus. *Frontiers in Psychology*, 5, Article 722.
<https://doi.org/10.3389/fpsyg.2014.00722>
- Clarke, V., Braun, V., & Hayfield, N. (2015). Thematic analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (3rd ed., pp. 222-248). SAGE Publications Ltd.
- de Ridder, D. T. D., de Boer, B. J., Lugtig, P., Bakker, A. B., & van Hooft, E. A. J. (2011). Not doing bad things is not equivalent to doing the right thing: Distinguishing between

- inhibitory and initiatory self-control. *Personality and Individual Differences*, 50(7), 1006–1011. <https://doi.org/10.1016/j.paid.2011.01.015>
- de Ridder, D. T., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M., & Baumeister, R. F. (2012). Taking stock of self-control: A meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review*, 16(1), 76-99. <https://doi.org/10.1177/1088868311418749>
- Duckworth, A. L., Taxer, J. L., Eskreis-Winkler, L., Galla, B. M., & Gross, J. J. (2019). Self-control and academic achievement. *Annual review of psychology*, 70, 373-399. <https://doi.org/10.1146/annurev-psych-010418-103230>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), 1-4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Ford, J. A., & Blumenstein, L. (2013). Self-control and substance use among college students. *Journal of drug issues*, 43(1), 56-68. <https://doi.org/10.1177/0022042612462216>
- Hagger, M. S., Wood, C., Stiff, C., & Chatzisarantis, N. L. (2010). Ego depletion and the strength model of self-control: A meta-analysis. *Psychological Bulletin*, 136(4), 495-525. <https://doi.org/10.1037/a0019486>
- Maranges, H. M., & Baumeister, R. F. (2016). Self-control and ego depletion. In D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (3rd ed., 42-61). The Guilford Press.
- Memon, A., & Higham, P. A. (1999). A review of the cognitive interview. *Psychology, Crime and Law*, 5(1-2), 177-196. <https://doi.org/10.1080/10683169908415000>
- O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: debates and practical guidelines. *International journal of qualitative methods*, 19, 1-13. <https://doi.org/10.1177/1609406919899220>

- Reynolds, J. J., & McCrea, S. M. (2019). Environmental constraints on the functionality of inhibitory self-control: sometimes you should eat the donut. *Self and Identity*, 18(1), 60-86. <https://doi.org/10.1080/15298868.2017.1354066>
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of personality*, 72(2), 271-324. <https://doi.org/10.1111/j.0022-3506.2004.00263.x>
- Walters, K. S., Bulmer, S. M., Troiano, P. F., Obiaka, U., & Bonhomme, R. (2018). Substance use, anxiety, and depressive symptoms among college students. *Journal of Child & Adolescent Substance Abuse*, 27(2), 103-111. <https://doi.org/10.1080/1067828X.2017.1420507>
- Willis, G. B. (1999). Cognitive interviewing: A “how-to” guide. *Research Triangle Park, Research Triangle Institute*.
- White, A., & Hingson, R. (2013). The burden of alcohol use: Excessive alcohol consumption and related consequences among college students. *Alcohol Research: Current Reviews*, 5(2), 201–218. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3908712/pdf/arcr-35-2-201.pdf?tool=EBI>

Appendix A

Interview Scheme – English

Part A

The topic of this interview is self-control. This interview consists of two parts.

First, I am interested in your ideas about self-control. Please feel free to mention anything that you associate with self-control. There is no right or wrong answer. You are invited to make use of the whiteboard to visualise your thoughts and map out your personal understanding of self-control.

1. What comes to mind when you hear 'self-control'?
 - What, to you, is self-control?
 - Can you explain what self-control is to you?
 - How would you describe the term self-control?
 - In what situations do you think self-control is important?
 - To which life domains do you think self-control is connected?
 - In what areas of life do you exert self-control?
 - Can you give me an example of self-control from your life?
 - Is self-control a relevant topic for you? In what way is it relevant?
2. Do you want to share any additional thoughts you have about self-control?

Part B

I will now present you with seven questions about self-control. We will go through them one by one. The aim is not to answer these questions, but to assess whether these questions are understandable and make sense to you. There are no right or wrong answers. The purpose is not to assess you but to evaluate the quality of the questions. Please do not hesitate to mention any difficulties you have with these questions, even if they may seem insignificant to you.

State Self-Control Scale SSCS

1. In the past couple of hours, have you felt that it is hard to make up your mind about even simple things?
2. In the past couple of hours, have you felt that things are bothering you more than they usually would?
3. In the past couple of hours, have you felt that you have less mental and emotional energy than you normally have?
4. In the past couple of hours, how easy was it for you to do something “good” that you did not really want to do (e.g. eating healthy food)?
5. In the past couple of hours, were you able to stick to your goals?
6. In the past couple of hours, how easy was it for you to refrain from doing something “bad” you really wanted to do (e.g. snacking)?
7. In the past couple of hours, were you able to resist temptations?

State Self-Control Face Validity and Usability Items

- a. What is the first thing that comes to mind when you read this question?
- b. What do you think this question is about?
- c. Can you repeat the question in your own words?
- d. Is it difficult to answer this question? If yes, why?
- e. Is there something you would change about this question? If yes, what?
 - a. Is the wording/phrasing clear to you?
- f. Do you have any additional thoughts about all or any of these questions?

Appendix B

Interview Scheme – German

Part A

Das Thema dieses Interviews ist Selbstbeherrschung. Das Interview selbst besteht aus zwei Teilen, A und B. Zunächst bin ich an deinen Gedanken zum Thema Selbstbeherrschung interessiert. Erwähne ruhig alles, was dir zu diesem Thema einfällt, denn es gibt keine falschen, oder richtigen Antworten. Wenn du möchtest, kannst du auch dieses Blatt Papier zur Visualisierung deiner Ideen bezüglich Selbstkontrolle nutzen. Wenn du bereit bist, können wir gerne beginnen.

1. Was kommt dir in den Sinn wenn du an Selbstbeherrschung denkst?

- Was ist Selbstbeherrschung für dich?
- Kannst du erklären, was Selbstbeherrschung für dich ist?
- Wie würdest du den Begriff Selbstbeherrschung beschreiben?
- In welchen Situationen findest du Selbstbeherrschung wichtig?
- Mit welchen Themen-Bereichen des Lebens findest du ist Selbstbeherrschung verbunden?
- In welchen Bereichen deines Lebens übst du Selbstbeherrschung aus?
- Kannst du mir ein Beispiel für Selbstbeherrschung in deinem Leben nennen?

2. Hast du noch irgendwelche weiteren Gedanken zu dem Thema, die du teilen möchtest?

Part B

Ich werde dir jetzt sieben Fragen über Selbstbeherrschung zeigen. Wir werden uns jede Frage einzeln anschauen. Das Ziel ist nicht, diese Fragen zu beantworten, sondern zu bewerten, ob diese Fragen für dich verständlich sind und Sinn ergeben. Es gibt dazu keine richtigen oder falschen Antworten. Der Zweck ist nicht dich, sondern die Qualität der Fragen zu beurteilen.

Bitte zögere daher nicht, mir jegliche Schwierigkeiten mitzuteilen, die du mit dem Verständnis dieser Fragen hast, auch wenn diese Schwierigkeiten dir unbedeutend vorkommen mögen.

State Self-Control Scale SSCS

1. Hattest du in den letzten Stunden das Gefühl, dass es schwierig für dich ist, sich zu entscheiden, sogar bei Kleinigkeiten?
2. Hattest du in den letzten Stunden das Gefühl, dass Dinge dich mehr stören, als normalerweise?
3. Hattest du in den letzten Stunden das Gefühl, dass du weniger mentale und emotionale Energie hast, als normalerweise?
4. Wie leicht ist es dir in den letzten Stunden gefallen etwas „gutes“ zu tun, was du nicht wirklich machen wolltest? (z.B. etwas gesundes essen)
5. Warst du in den letzten Stunden in der Lage deine Ziele einzuhalten?
6. Wie einfach war es für dich in den letzten Stunden etwas „schlechtes“ zu unterlassen, was du gern tun wolltest? (z.B. ungesunde Snacks zu essen)
7. Warst du in den letzten Stunden in der Lage Verlockungen zu widerstehen?

State Self-Control Face Validity and Usability Items

- a. Was kommt dir als erstes in den Sinn, wenn du diese Frage liest?
- b. Worum, denkst du, geht es in dieser Frage?
- c. Kannst du die Frage in deinen eigenen Worten wiederholen?
- d. Wäre es schwierig, diese Frage zu beantworten? Wenn ja, warum?
- e. Gibt es etwas, was du an dieser Frage ändern würdest? Wenn ja, was?
 - a. Ist die Formulierung der Frage klar für dich?
- f. Hast du irgendwelche weiteren Gedanken zu einer, oder allen Fragen?

Appendix C

Detailed textual description of results concerning Part B

Feasibility of the state self-control scale (Bagala, 2021)

To answer the second research question, 8 themes have been established. As already discussed in the data analysis section, each of the themes corresponds to one of the questions designed to assess the face validity of the according item.

Table 12

Face validity and usability themes per question

Question	Theme	Example
“How would you answer this question?”	Comprehensibility	“Well yes, I’d answer that with yes.”
“Can you repeat the question in your own words?”	Reproducibility	“How hard was it for you to discipline yourself in the last few hours?”
“What is the first thing that comes to mind when you read this question?”	Automatic associations	“Well maybe about the energy you have to mobilise to face it when you really don’t want to do something...”
“What do you think this question is about?”	Construct measurement	“I would say this question is pretty much about self-control.”

Question	Theme	Example
“Is the wording/phrasing clear to you?”	Phrasing	“Maybe I would rephrase it a bit...well, I don’t know exactly how, but sticking to your goals, that might not be specific enough.”
“Do you find this question difficult to answer? If yes, to what extent?”	Level of difficulty	“I don’t find that question difficult to answer.”
“Is there something you would change about this question? If yes, what?”	Need for change	“Okay, I would rephrase the words ‘difficult’ and ‘minor things’, if that is possible, or perhaps provide an example of it.”
“Do you suggest any other questions? Do you have any additional thoughts about any or all of the questions?”	Additional input	“Maybe other scenarios could be used, like when you are feeling really bad, or like, the difference between a really good and really bad day...”

To gain meaningful insights into the face validity of the items, the results of the above-presented categories (i.e., *comprehensibility*, *reproducibility*, etc.) will be presented per item.

Item 1

Comprehensibility. The first item *“In the past couple of hours, have you felt that it is hard to make up your mind about even simple things?”*, was comprehended and answered logically by all participants. Two of the participants answered in a relatively elaborate manner, e.g., *“Well, I think I would answer the question with no because I didn't have to make any decisions because I did uni stuff. Well, I think I would answer the question with no because I didn't have to make any decisions because I did uni stuff.”*, while three participants answered with a few words *“in the last few hours... actually yes”*.

Reproducibility. Similarly, all five participants were able to reproduce the core message of the first item correctly. One participant stated it as follows *“Have you had difficulty making decisions in the last few hours?”*.

Automatic associations. Furthermore, concerning the automatic associations, four participants related the item to themselves and their own experiences of the past *“Um... so, first of all, I asked myself if there were any difficulties for me”*, while the fifth participant associated the item with a rather abstract concept. *“yes, that there is, uh... so... no self-control or self-restraint. More like... yes, determination or something, that would come to my mind now”*.

Construct. Moreover, when asked for their opinion about the theme or construct of the item, three participants mentioned impulse control. One participant mentioned that they have difficulty controlling themselves even when regarding small things. Another participant thought about the construct of determination, and one participant identified the theme of the item to be decision-making.

Phrasing. All participants agreed that the phrasing of the first item is rather clear. However, one of them mentioned that they find “difficult” subjective, *“So difficult is always a thing...for some it can be more difficult and another would not necessarily call it difficult”*, and another participant considered the item to be phrased as *“a little too long”*.

Level of difficulty. Two participants found the item not hard to answer, while three categorised it as difficult because the terms of the item are not clearly defined. One of them explained “*yeah, I had to think about what I consider to be a small thing and what difficult means to me. Because then I tried to think about today and cleaning up was a bit more than a minor thing. That's why I was a bit unsure*”.

Need for change. Lastly, two of the participants did not express the need to change the first item, while three other participants argued that the terms “*difficult*” and “*little things*” should be specified to avoid misunderstandings.

Item 2

Comprehensibility. The second item “*In the past couple of hours, have you felt that things are bothering you more than they usually would?*” was understood and answered adequately by all participants. Three of them answered briefly, while two participants elaborated on their answers. One participant, for instance, answered “*Yes, just because I'm locked in my room, things keep making me... like I don't have any compensation*”.

Reproducibility. All participants were able to repeat this item in their own words, as well as reproduce the core information thereof. Three participants repeated the wording of the original item closely, “*Uh, yeah, if lately, I've had the feeling that things bother me more. I would say that exactly as the question says*”, while two of them interpreted and shortened the item to some extent “*did you experience increased irritability in the last few hours?*”.

Automatic associations. Concerning the automatic associations elicited by the second item, four of the participants recounted situations from their near past, in which they felt bothered by external factors. One participant shared the following: “*The first thing that comes to mind is... wow, now I think I'm a bit stuck on these tidying-up-thoughts haha, now only examples like this come to my mind... Yes, for example when I'm just hanging out, I don't mind if my room is messy, but when I start doing something or cleaning it up, I pay attention*”.

and then it bothers me". Another participant indicated that they are unsure about what comes to their mind when reading the item.

Construct. Two participants indicated that they did not know what the item was supposed to inquire about. One of them indicated that they find the question about the topic of the item hard to answer. In contrast to that, two other participants argued that the item is likely to measure irritability or neuroticism. Lastly, another participant argued that the item could thematize one's sensitivity with regard to external factors "*Mh... perhaps how strongly you react to your surroundings, so to speak, in terms of self-regulation?*".

Phrasing. Four out of five participants agreed that the wording of the second item is clearly understandable and did not elaborate further on this matter. In contrast to this, the fifth participant expressed their confusion about the item: "*Yes, but I... yes, I think it's just unclear what exactly is meant with this and what it is about. So no idea, I'm kind of struggling with it right now*". They were not able to specify which part of the item was phrased inexplicitly.

Level of difficulty. Three participants considered the item to be easily answerable, even though one of them mentioned that they found it to be rather broad. Another participant experienced answering the item as more difficult, compared to the first item. Lastly, the fifth participant argued, "*I find it somehow more abstract because you don't perceive your irritability as if you have to make a difficult decision*".

Need for change. Similarly to the responses with regard to the difficulty of the second item, four of the participants did not think that the item needs to be modified in any way. One, however, felt that the item is not specified enough and should be altered: "*It is somehow too unspecified... that is somehow a completely vague question*".

Item 3

Comprehensibility. The third item "*In the past couple of hours, have you felt that you have less mental and emotional energy than you normally have?*" was understood and briefly answered by all of the five participants. Four of them provided one-word answers, while one

of them explained that their mental and emotional energy remained stable: *“Mh... I would say it hasn't really changed in the last few hours”*.

Reproducibility. When being asked to rephrase the item in their own words, all participants managed to reproduce the core message of the item. One, for instance, phrased it as follows: *“Whether in the last few days or hours one had the feeling that one had less energy, is mentally drained, or not very energetic, or so”*. Another participant interpreted mental and emotional energy as fatigue: *“Um... have you been tired in the last few hours... tired? Something like that”*.

Automatic associations. The majority of participants expressed that when confronted with the third item, mostly personal experiences and emotions came to their minds. One of them explained: *“Um... the feeling you're feeling when you feel that way. So this... so... when you're just exhausted, so to speak. Somehow this feeling came to mind first”*. Furthermore, another participant indicated that they were not sure about the meaning of “mental and emotional energy” in the context of the item. The fifth participant associated less mental and emotional energy with a declining capacity for self-control: *“So, regarding the subject of self-control it's of course... if you have less and less mental and emotional energy, then it is, of course, more difficult to control yourself because it is of course energy-consuming to control yourself”*.

Construct. Concerning the theme, four participants roughly identified the relationship between emotional and mental fatigue to be the thematic core of this item. One participant explained it as follows: *“Well, maybe about the energy you have to mobilise to face it when you have to do something that you really don't feel like doing. Because if you have little emotional energy then it is much more difficult to bring yourself to do something”*. In contrast to this, another participant argued that the theme of the item is likely to be conscientiousness: *“Um, yes, probably this feeling that you are measuring something, which is then probably very low conscientiousness when you have so little energy”*.

Phrasing. All participants considered the item to be clearly phrased.

Level of difficulty. Three participants did not identify any difficulty with regard to answering the third item. The other two participants, however, criticised its level of abstraction concerning the concept of mental and emotional energy. As one participant explained, *“I think, well, I find mental energy and emotional energy are somehow such abstract things... I might not always know, am I really tired, or do I have no energy... you never know. Somehow difficult to measure too”*.

Need for change. When asked if they would like to change anything about item 3, three participants expressed their need to somehow specify the concept of mental and emotional energy: *“I think for some it can be difficult to understand what is meant by mental and emotional energy. But the terms are actually relatively familiar to me, so...”*. However, besides changing those fragments of the item, no participant could specify what an improved item would look like. The remaining two participants were content with the item: *“No, it’s actually pretty clear”*.

Item 4

Comprehensibility. The fourth item *“In the past couple of hours, how easy was it for you to do something “good” that you did not really want to do (e.g. eating healthy food)?”* was understood and answered by all participants. Four out of five participants answered in a rather elaborate manner, providing background information with their responses. One participant, for instance, replied *“Pretty easy, because I actually do things all day that are bad for me, that’s why I always do one thing during the day that is good for me, and I’ve actually done it in the last few hours, but apart from that, it’s not so easy for me”*. Another participant solely stated that it was difficult for them to do something good for themselves.

Reproducibility. Concerning the reproducibility of the fourth item, two participants indicated that they found it difficult to rephrase the item in their own words. One of them, therefore, explained that they feel incapable of reproducing it: *“Um... how often can... no, how*

often have you... well that is difficult, I would simply answer with a no". Three other participants, however, reported no difficulty in repeating the item; their answers were closely related to the original question. One participant, for example, rephrased it as follows:

"Whether I find it difficult to do something good for me in the last few hours".

Automatic associations. In terms of mental associations the participants experienced when being confronted with the fourth item, most of the associations they reported are related to the construct of self-care. This can be illustrated by the following excerpt: *"Self-care. Active self-care. Even if you don't feel like doing something, for example, but then do it anyway, simply because you know that you will feel better. When you have such a really shitty phase and actually don't want to take a shower and just want to crawl into bed... but then you force yourself to do it because you know you will feel a bit better afterwards"*. Two participants, on the other hand, associated rather personal and less abstract scenarios with this item.

Construct. Two of the participants expressed that, in their opinion, the fourth item thematises "direct" self-control. As one of them phrased it: *"Uh... probably directly self-control in the sense that that's exactly what it is"*. Another participant indicated that the item might not only thematize self-control, but also resilience. Furthermore, the fourth and fifth participants provided somewhat more sophisticated responses. One explained: *"Mh... maybe um... what... in what way good habits in terms of health can be associated with self-regulation. And positive aspects or negative aspects associated with it"*. Similarly, the other participant hypothesised that the item might be about how well an individual is capable of overcoming their laziness to generate a positive long-term effect.

Phrasing. The majority of participants considered the phrasing of item 4 to be clear and understandable. One of them, however, criticised the lack of examples as a kind of interviewee guide. They argued: *"Yes, maybe I would add a few more examples that you can*

use as a guide. So different everyday situations or something like eating, self-care, no idea... I think you can look at it a little differently then”.

Level of difficulty. Similarly to the feedback on the phrasing of item 4, four participants did not find it difficult to answer, while one expresses their concern that some individuals might lack awareness about what can be considered “good” for them: *“Mhh... well, I think I didn't find that difficult to answer... but I could imagine that people might not even actively know what is good for them. So maybe the examples, or a little... I don't know if there's a definition of it or something. I think some people are not in touch with themselves that much, I could imagine”.*

Need for change. Moreover, three participants indicated that they would not change anything about the item, while the two remaining participants agreed that the item should be modified at least to some extent. One of them argues: *“Mhh... yes, and the question is just like “how easy...” so and so. I would perhaps start with “Did you find it easy?” to ask yes / no wise. Because how easy something is, is somehow a difficult question to ask”.* The other participant who expressed their criticism thinks that “good” needs to be defined to be comprehensible.

Item 5

Comprehensibility. The fifth item *“In the past couple of hours, were you able to stick to your goals?”* was comprehended and logically answered by all participants. Four of them replied rather briefly, while one questioned the nature of the goals which the item inquires about: *“What goals? Haha. So that would be my answer. Yeah, no idea. Like what goals? I won't reach my life goals in a few hours. And I don't just set myself goals for the day every day, because if I don't manage them, I'll be more frustrated than if I just manage a few things without writing down a long page of goals beforehand”.*

Reproducibility. When asked to repeat and rephrase the fifth item in their own words, all participants were able to reproduce the content of the original item closely.

Automatic associations. The majority of participants (i.e. four out of five) mostly associated personal experiences with this item. One, for example, shared the following: “*Depending on what my goal was the corresponding day. Yeah, today it was tidying up and cleaning. I actually wanted to do my room, but I didn't feel like vacuuming it anymore, but it's still tidy*”. Similarly, other participants narrated fragments of their daily lives. In contrast to this, the fifth participant associated the item with somewhat more abstract constructs:

“*Hmm... self-control obviously, motivation, um... planning in advance, above all. Because you should, of course, always set goals in such a way that you can also meet them, otherwise it doesn't make any sense. Of course, this can also be seen with self-control, so that you can assess yourself in the future*”.

Construct. All participants identified the broader topic of goal-setting as the theme of the fifth item. One participant, for instance, explained it as follows: “*Hmm... self-control obviously, motivation, um... planning in advance, above all. Because you should of course always set goals in such a way that you can also meet them, otherwise it doesn't make any sense. Of course, this can also be seen with self-control, so that you can assess yourself in the future*”. This is largely in line with the statements of the other participants, since substantial thematic overlap can be seen, which can be illustrated by the following excerpt of another participant: “*Uh, maybe with regard to self-control, for example sticking to your diet in order to lose weight, for a long-term goal. That this may be measured, I don't know*”.

Phrasing. The majority of participants agreed that the phrasing of this item is clear. Two, however, expressed their criticism concerning the specificity of the term “goals”. One of them suggested the following: “*Maybe I would rephrase it a bit... well I don't know exactly how, but sticking to your goals... that may not be specific enough. Maybe you managed to do what you wanted to do in the past. Or, for example, adhering to goals, that can be anything [...] I would look at what exactly is meant by goals, whether these are general goals or goals that have been set specifically for this time*”.

Level of difficulty. Three out of five participants did not consider the fifth item to be difficult to answer. Another participant adds the remark, that as soon as an individual is aware of their goals, the item is easily answerable. The fifth participant, on the other hand, does not agree with this and finds the item difficult to answer: *“I just find it difficult to answer, because... I don't know, I somehow don't think that all people set goals 24/7 every day and yes, maybe you can find a better word for, or a different way of describing it, for the same construct”*.

Need for change. Two participants do not feel the need to modify the item in any way. Three of them, however, argue, as already mentioned previously, that the item is not specific enough with regard to the meaning of “goals”. Therefore, one participant suggested not asking for an individual’s goals in the last few hours (since they might not have had any), but rather specifically for the last time they had an explicit goal: *“Yes, or that you ask about the other day when you had a goal... that you don't necessarily ask for the last hours, but maybe the last time that you set something as your goal”*.

Item 6

Comprehensibility. All participants were able to comprehend the content of the sixth item. Four of them provided short, but concise answers, while one expressed their struggle with answering in a meaningful manner: *“Well, it's just... I always find it difficult to answer... what do you mean by bad... that's also the question... that's why I would say it was relatively easy for me to do what I wanted to do in the last few hours”*.

Reproducibility. When asked to repeat the item in their own words, all five participants captured and recreated the core message thereof. For instance, one participant rephrased the item as follows: *“Uh... to what extent was it difficult or not so difficult for me to refrain from doing something with negative consequences, or perhaps negative consequences”*.

Automatic associations. Inquiring about their mental association with the item, the vast majority of participants thought about personal pleasures they try to refrain from regularly. More specifically, four of the participants either thought about snacks or marijuana. One of them stated: *“So in the first moment I feel a little bad because I think about how much I snack haha. And yes... that's just what's in my head. But on the other hand, I also like to snack”*. The fifth participant, however, identified “self-control” as their strongest mental association.

Construct. Concerning the construct the item is supposed to measure, four participants identified self-control as the core theme. Two of them did not elaborate further, while the third explained: *“Yes, I think uh... a bit about self-control. If you have the need for weed and snacks, you can still say no, because otherwise, you wouldn't even achieve these positive things, because then you have become weak and the self-control is gone”*. Furthermore, the fifth participant argued that the item might thematise the discrepancy between wanting to do something while knowing that one should not do so: *“Hmm... maybe this dissonance, this “I know, actually I should regulate myself”, but I don't do that and then... this, so I have no idea, not doing something bad, that means “I know, actually, I should do that, or don't do it” so, like what does it take for you to not do this”*.

Phrasing. Regarding the clarity of phrasing, four participants explicitly stated that they perceive the item as adequate. The fifth participant, however, criticised the specificity of the item: *“Mhm. Yes, or this question, what is bad, is a bit imprecise. So, everyone knows what is meant, but at the same time it is different for everyone”*.

Level of difficulty. All participants indicated that they do not perceive the item as difficult to answer.

Need for change. Regarding possible changes to item 6, three out of five participants did not express the need to rephrase or restructure anything. The fourth participant felt like something should be changed but could not specify this further. Lastly, the fifth participant

argued that there should be clearer definitions and more examples: *“yes, I think I would change the same things about it as with the question with the good things, to somehow define the 'bad',... what does it mean that you do things that are not good for you, or what 'bad' entails, maybe a few more examples instead of food, or snacks, or drug cravings, something like that...”*.

Item 7

Comprehensibility. The seventh item *“In the past couple of hours, were you able to resist temptations?”* was understood and briefly answered by all participants.

Reproducibility. All participants were able to rephrase the content of the item accurately in their own words. For instance, one participant repeated the item as follows: *“Yes, if I could resist any desired object by means of my self-control”*.

Automatic associations. With regard to their automatic mental associations, two participants disclosed that they had to think about snacks, while two other ones thought about consuming marihuana *“Haha, that I actually wanted to smoke weed but didn't have any more weed”*. The fifth participant, on the other hand primarily associated the item with the general concept of self-control.

Construct. When inquiring about the topic of the seventh item, all of the participants identified the general capability of maintaining self-control in the face of temptation as the main theme of the item. This can, for example, be illustrated by the following response: *“Mhh... well, resisting temptations actually has something to do with self-regulation, so that measures, so to speak, how well my recent self managed regulating”*.

Phrasing. All of the five participants briefly indicated that they found the seventh item to be phrased clearly.

Level of difficulty. Concerning the difficulty level of this item, three participants agreed that it was not difficult to answer whatsoever. The fourth participant, however, argued that possible enabling factors in the external environment of an individual need to be taken

into account: *“Um... well, not in itself. There are just a few variables that are not covered, because theoretically if I had weed to smoke available after cleaning up, I would have smoked for sure, but I had nothing, that's why I have not smoked. So maybe if the things were also available because then I think it makes it easier or harder accordingly. I think that'd be nice to consider”*. The fifth participant criticised the specificity of the term “temptations”.

Need for change. Four of the participants explained that they did not deem it necessary to modify the seventh item in any way. However, as already mentioned in the section above, one participant would suggest incorporating additional variables in the item to correct for possible biases stemming from the availability of specific temptations.