

Stop and Start control:

A distinction within self-control

Benjamin J. de Boer

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Stop and Start control
A distinction within self-control

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Een onderscheid binnen zelfcontrole

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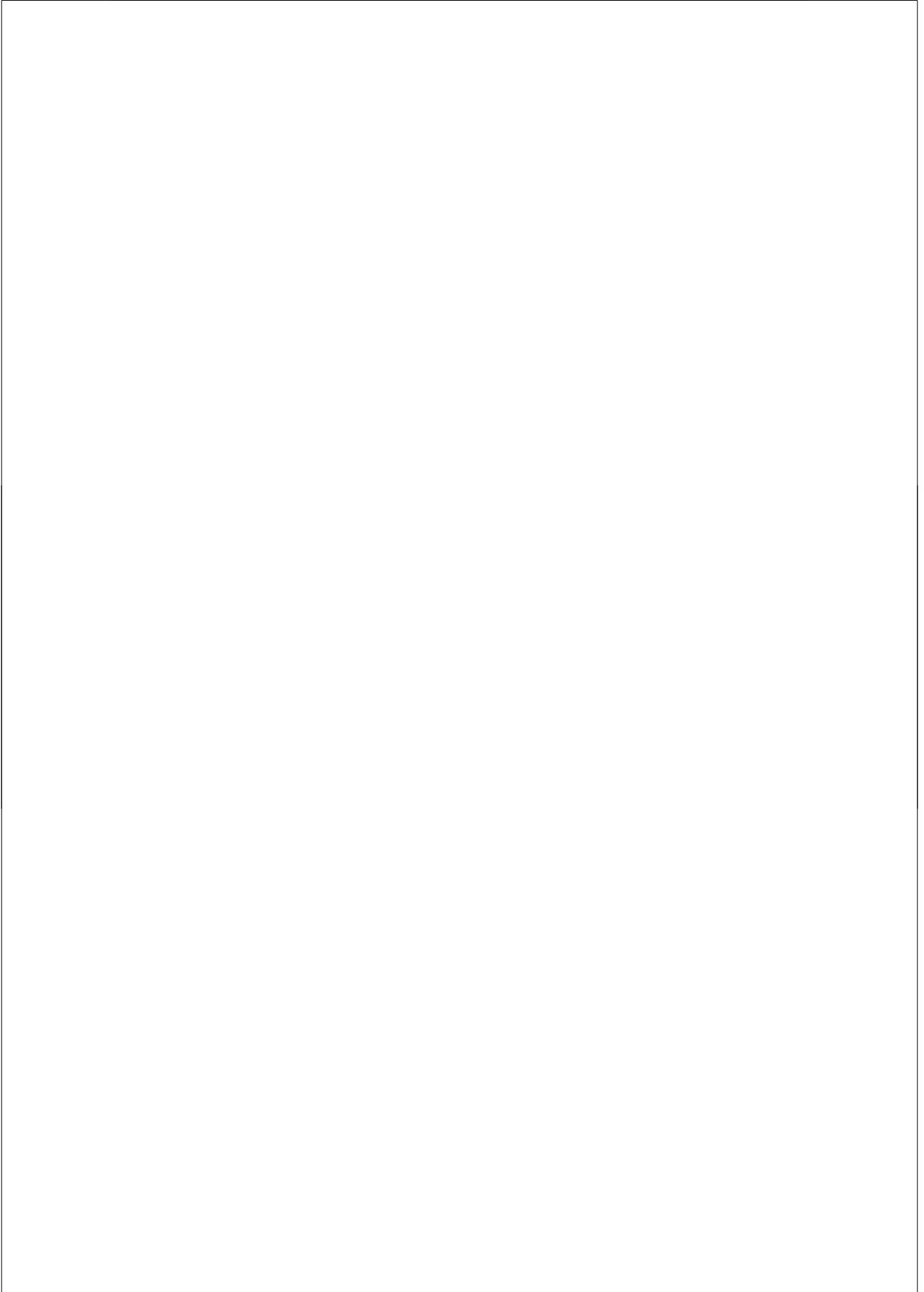
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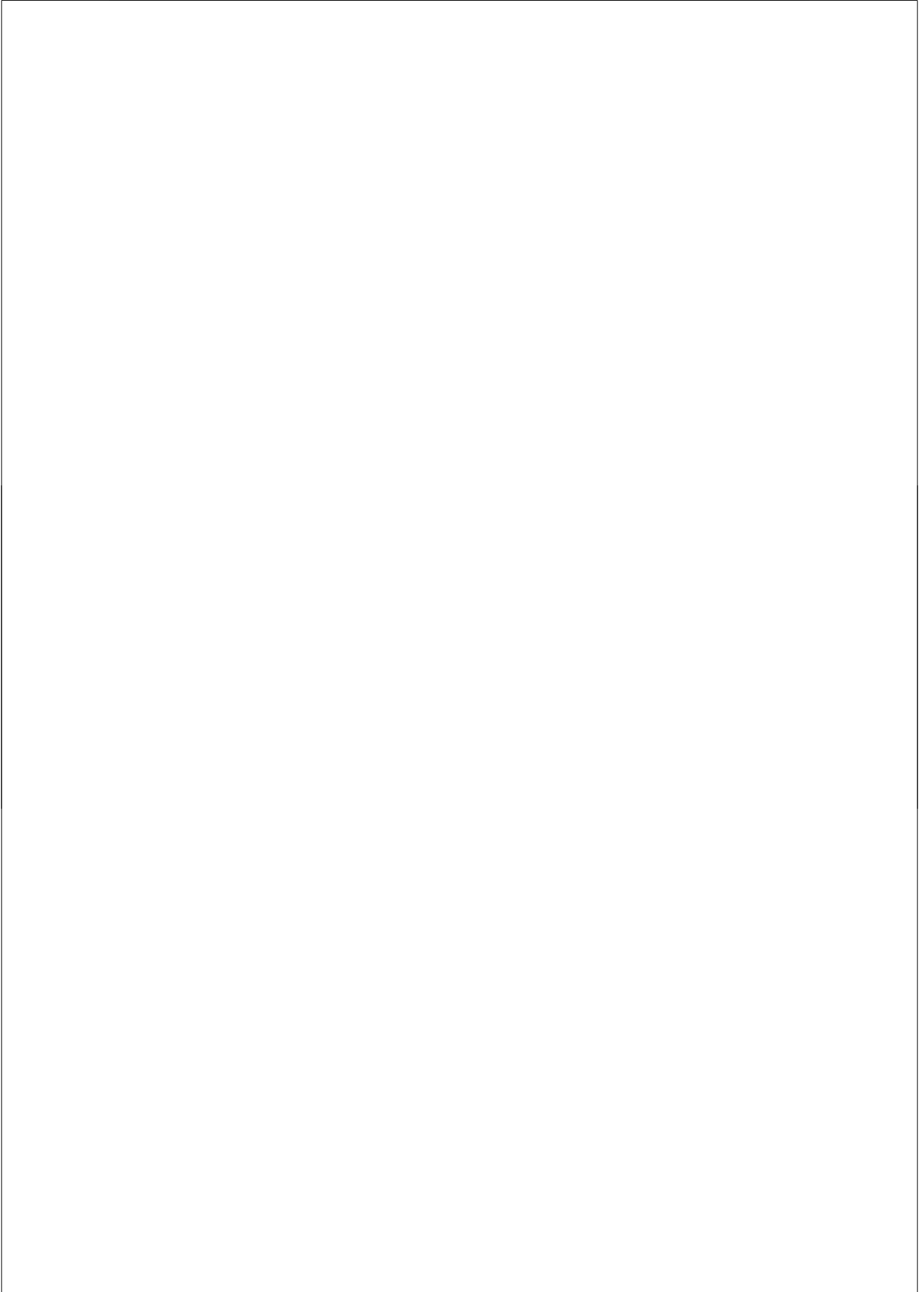
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Chapter 1

Introduction and overview



The essence of self-control is the effort people put into shaping their own behavior. Amongst a vast array of behavioral options, internal as well as external pushes and pulls, rewards, threats, goals and wishes, people can choose, to a certain extent, which behavior they will perform. Self-control has been defined as the exertion of control over the self by the self (Muraven & Baumeister, 2000) and as such it is one of the forces that shapes human behavior. By means of self-control people can choose not to indulge in pleasures because of eventual unfavorable outcomes, such as forgoing delicious sugary deserts in order not to gain weight; and people can choose to take on difficult or tedious tasks because of valued outcomes, such as getting physical exercise. The research in this dissertation will show that these examples actually stem from two distinct forms of self-control, namely stop control and start control. In order to understand and appreciate the new distinction, this introduction will first explain some of the theoretical background to the distinction and the research questions that have been used to guide the investigations.

Self-control theory

Self-control has been described as changing automatic responses in a conscious manner (Baumeister & Vohs, 2004). On many occasions, people are drawn to certain behaviors by cues in the environment. For example a good joke will elicit the behavioral response of laughing in most people. These and other automatic responses are normal and actually enhance performance. When people would have to consciously determine every behavioral action that is taken, they wouldn't get much done. Sometimes, however, the direct automatic response can be detrimental to performance. A person who is trying to quit smoking will still have the automated response of smoking to many cues in the environment and, without conscious thought, will smoke again.

Self-control is important when the direct responses people have, their urges, impulses or habits, represent behavior that in the long term will harm them. When this is the case, people can try to change their behavioral response, and do so in a conscious manner. Changing behavioral responses can be of great importance, for instance when someone has behavioral problems. The construct of self-control has been shown to be beneficial in several domains such as addictions, aggression, and criminality (DeWall, Baumeister, Stillman, & Gaillot, 2007; Hirschi, 2004). In these cases, self-control can reduce the negative behavior and with that, take away some of the negative outcomes for the people involved.

Self-control can also provide people with valuable outcomes that are hard to reach. Mostly, these outcomes will be long-term and the road to these outcomes is filled with pleasures and seductions that can thwart the attainment of these outcomes. Take for instance a person that wants to lose weight and goes on a diet. The weight loss will not occur overnight and the diet must be followed over a period of time, even when there is a birthday party with various cakes,

or a business meeting with lunch. In these instances, one has a variety of foods available that, although appetizing, must not be eaten in order to stick to the diet. Self-control must then be used to change the easy, almost automatic, response of just eating what is available. Indeed, self-control has been shown to improve dietary restraint (Kahan, Polivy, & Herman, 2002) and as such is a positive force for people with certain eating disorders (Tangney, Baumeister, & Boone, 2004). Weight loss can also be achieved through physical exercise but this is also a long-term method and the choice to go running outside or to go to the gym may not be an automatic response for those wanting to lose weight. Self-control must thus be used to perform these behaviors and it has been shown that high self-control relates to physical health (De Ridder & De Wit, 2006).

The examples mentioned above have in common that there is a moment of choice for behavior, where there is at least one option that is directly, possibly subconsciously, preferred for its short-term outcome, and at least one other option that has a more valued, but more distal outcome. These outcomes can be positive or negative, they can be the something that is gained or the avoidance of something that is lost. For instance, one can quit smoking to save money or to avoid lung-cancer. Also, the self-control is not directly tied to the outcome but to the behavior that is needed for the outcome. Self-control itself does not increase health, it is the dieting or the physical exercise that increases health and for both self-control is required. Which behavior is chosen -and both can be chosen- is up to the person wanting to get better health themselves. Also, the need for self-control is different from person to person, for the same behavior. For people who do not smoke, it is very easy not to smoke, for them it would not even require self-control, but for smokers it does.

Two systems

The interpersonal differences for self-control requirement, difficulty and outcomes can be explained by the 2-system framework of Metcalfe and Michel (1999) that illustrates what is automatic and what is conscious. This framework consists of a hot, emotional 'go' system and a cool, cognitive 'know' system. The hot system is reflexive, fast and under stimulus control. The cool system is reflective, slow and under self-control. The separation of the reflexive and reflective functions in the description of the self-control process has been extensively described by Carver (2005). In short, the hot system is responsible for the more automated responses and the cool system is involved with the more conscious choices for behavior.

Activity in the hot system is triggered by a stimulus, for example an event, emotion, or object in the environment. What triggers this system will depend on biological determinants (such as brain chemistry), previous experiences, and needs. For instance, an alcoholic will pay more attention to a glass of alcohol than a non-alcoholic and a hungry person will pay more attention to the smell

of food than a person who just had lunch. The activity of the hot system will, in a very short amount of time, elicit behavior towards or away from the stimulus, and without further deliberation, the person will act out this behavior. Examples of behavior purely driven by the hot-system can be found in known reflexes such as startling when there is a loud noise or retracting a hand from a hot object. Behaviors elicited by the hot-system are aimed at short-term outcomes, such as safety, joy, and pleasure.

The cool system does not respond fast to stimuli. Instead, it is more consciously involved with behavior and does not even need an external stimulus to be active. Activity in the cool system is more aimed towards long-term or higher order outcomes, such as being healthy or being a good person. The achievements that the cool system focuses on will be different for people, based on their wishes, hopes and abilities, again based on their biological determinants and previous experiences. Examples of behavior purely driven by the cool system can be found in most common new-years resolutions, such as giving up bad habits, or finishing challenging job-related projects.

Both systems can be active simultaneously and this is when self-control can become involved. If the hot-system elicits behavior aimed at short-term outcomes that are in conflict with the long-term outcomes focused on by the cool system, some self-control is required to stop the behavior elicited by the hot system. The greater the discrepancy between both forces, the more self-control is required. The process of self-control thus incorporates a feedback loop, in which behavior is compared to a certain standard, or goal (Carver & Scheier, 1982). If the behavior does not match the standard, it should not be performed.

Trait, state, or resource?

Thus far, self-control has been discussed as a force that is consciously activated which is useful for achieving long-term or higher-order outcomes. The amount of force is partly dependent upon the effort people put in, but mostly upon their individual capacity for it. It is known that people differ in the amount of self-control they are capable of. For this reason, self-control has often been operationalized as a stable trait (e.g., Brandon, Oescher, & Loftin, 1990; Tangney et al., 2004). Stating that self-control is a trait not only implies that people can differ in the amount of self-control they are capable of at any time, it also implies that it is a characteristic of people that is more or less stable over time and across different situations.

Research has also shown that the amount of self-control that is used by people varies depending on factors such as, emotions (Baumeister, Zell, & Tice, 2007), affect (Tice, Baumeister, Shmueli, & Muraven, 2007), and distress (Tice, Bratslavsky, & Baumeister, 2001). When experiencing negative emotions, the capacity for self-control is temporarily reduced, for instance it is harder to maintain a diet on a day when one is feeling bad. Also, the capacity to control

behavior is reduced by previous self-control efforts (Muraven & Baumeister, 2000). It might be easy to maintain calm when the first person is rude to you, but the sixth or seventh on any given day will be much more likely to receive a harsh response. Thus, self-control can also be operationalized as a state, which is to say that the self-control capacity of one person can fluctuate over time and is influenced by internal and external forces.

One area that has received relatively little attention is the acquisition of self-control capacity. Since self-control strength is known to diminish immediately after its use, a muscle metaphor has been introduced for describing its process (Baumeister, Heatherton, & Tice, 1994). No matter how strong you are, after you have lifted some weights, you can no longer lift the same amount of weight as you could when you first started. This metaphor can be extended to other qualities of self-control. If you lift heavy weights every day, you will become stronger. In the same way, practicing self-control for several days or weeks can increase the strength of self-control, such that using self-control will take up less energy (Muraven, Baumeister, & Tice, 1999). Since it is possible to increase self-control strength through exercise, self-control can also be seen as a resource. The size of this resource is variable and it can be depleted and then replenished.

Self-control shows characteristics of a trait, a state, and a resource. It displays interpersonal differences, some people can control their behavior better than others; it displays intrapersonal differences, one person will be able to control behavior at one point but have more difficulty with it at another, and the capacity for it can increase over time, through practice. In the present dissertation, self-control is mostly viewed as a trait, different between people. The same is proposed for the theoretical distinction; the capacity for stop control will differ between people and the capacity for start control will be different between people. Also, the capacity for stop control and the capacity for start control are separate, such that someone may show an equal capacity for stop and start control, or a high capacity for stop control and a low capacity for start control, or vice versa. This distinction between stop and start control, although mainly tested using a trait operationalization of self-control, is thought to apply to self-control in general, whether it is seen as a trait, a state, or as a resource.

The distinction between stop control and start control

Self-control is paramount in pursuing long-term and higher order goals. Self-control is often involved in preventing undesirable behavior. Examples include drinking and smoking, which have been shown to be reduced with the use of self-control (Baumeister et al., 1994; Muraven & Shmueli, 2006). In some cases, however, self-control is needed to initiate desirable behavior. Examples are studying and exercising. High self-control is related to better academic performance (Duckworth & Seligman, 2005; Shoda, et al., 1990) and physical

health (De Ridder & De Wit, 2006). These different outcomes of self-control may share an overarching goal, such as better health, but the methods with which self-control affects the behaviors that lead to these outcomes, differs in one important way. Self-control aimed at preventing undesirable behavior will stop the behavior, self-control aimed at desirable behavior will initiate or start the behavior. The outcome of the first form of self-control therefore is no behavior, the outcome of the second is actual behavior. In essence the distinction made here is between effortfully not doing something and effortfully doing something.

The differences in self-control outcomes provide grounds for a distinction within self-control, between preventing undesirable behavior and initiating desirable behavior. This dissertation will introduce two new forms of self-control: stop control and start control. Stop control is defined as self-control aimed at short-term attractive but long-term undesirable behavior, in order not to perform this behavior. Start control is defined as self-control aimed at short-term unattractive but long-term desirable behavior, in order to perform this behavior. The terms (un)attractive and (un)desirable relate back to the 2-system framework (Metcalfe & Mischel, 1999). I will explain these terms using a description of the self-control process, for stop and start control separately.

For stop control, the behavior that is the target of self-control is determined by the reflexive system. First, if a person experiences an impulse for certain behavior then this behavior is considered attractive. Second, this person also holds some (self-set) goals, explicit or implicit, determined by the reflective system. If the targeted behavior is in line with these goals then the behavior is desirable, if not, then it is undesirable because it thwarts the achievement of the goals. Third, if the attractive behavior is undesirable, stop control is needed to avoid the behavior. Thus stop control is required for behavior that is attractive but undesirable. Note that if the attractive behavior were desirable, no self-control would be required at all. Also, the self-control that results after a mismatch between impulsive behavior and goals comes from the reflective system.

For start control this process is similar, but opposite. If a person sets goals for a certain behavior, using the reflective system, this behavior becomes desirable. When, however, this behavior is unattractive as determined by the reflexive system (difficult, boring, fatiguing, scary, etc.), start control is needed. In short, the immediate attractiveness of behavior is determined by the reflexive system, and the long-term desirability is determined by the reflective system.

Stop control stops attractive behavior, when it is not desirable. Start control starts unattractive behavior, when it is desirable. Examples of successful stop control are not hitting a person although you really want to because he made you mad, not telling secrets although it is great to gossip, and not watching television when you have other, more important things to do. Examples of

successful start control are giving someone bad news although you are worried about the response, working on a project that needs to be finished even though it is late and you are tired, and restarting a task when you thought you were finished but found out that the results were wrong.

Research questions

The main question for the research presented in this dissertation is whether the theoretical distinction between stop and start control is a valid one. In practice, this translates into the following research questions: a) *Can stop and start control be empirically distinguished using a questionnaire?* b) *Do stop and start control relate differently to important outcomes?* c) *Are the capacities for stop and start control differently related to other personality characteristics?*

The relevance of self-control in general has already been demonstrated in previous research, as self-control is shown to relate to many positive outcomes. More knowledge on this capacity to control behavior could greatly benefit both research and practice. A more clearly defined construct could further self-control research as it allows for more pinpointed investigation of the relations, causes and outcomes of self-control. A study by Giner-Sorolla (2001) already showed that differentiating between self-control in delayed-cost dilemmas (benefit now, cost later or no benefit but also no cost) and the self-control in delayed-benefit dilemmas (cost now, benefit later or no cost but also no benefit) is useful, as the self-control in both situations was related to different affective responses. In delayed-cost dilemmas one requires self-control *not to pursue* the benefit as it eventually leads to negative outcomes, as with smoking. In delayed-benefit dilemmas one requires self-control *to pursue* the benefit since the impulse is to avoid the cost, as with preparing for exams. This shows that different types of self-control are required in different settings, a point that could stimulate research into the effectiveness and use of self-control.

These and other findings regarding self-control and the distinction between stop and start control can also prove useful in practice. Many programs exist to help people overcome their addiction and these programs could benefit from more knowledge on stopping attractive behavior. Conversely, many study programs could benefit from knowledge specific to starting behavior. Also, since interpersonal differences within self-control exist, it might prove useful to devise a test for people to find out which type of self-control they have the most difficulty with.

The first research question, regarding the theoretical distinction itself, required a questionnaire able to measure both forms of self-control. The items in such a questionnaire would represent either stop or start control and people's capacity for both forms of self-control could subsequently be calculated based on their responses to the questions. Since the distinction between stop and start control is new, no questionnaire was available with items that were explicitly designed to target either form of self-control. However, many self-control

questionnaires that measure general self-control already existed. So the first step of this research was to investigate whether the items in these questionnaires were suited to measure stop and start control separately. If the theoretical distinction between stop and start control was valid, these items could be identified in existing questionnaires, and measurement of self-control with stop control items would show different results from measuring self-control with start control items, for most people. Consequently, measuring self-control with both items in separate scales would create largely independent scores for each scale. These scores could then be used to construct stop and start control rating for people and allow for these ratings to be related to their behavior, or other constructs that were measured. The second question, regarding self-control outcomes, requires exactly that, the relation of stop and start control to outcome variables.

Specific outcomes for stop and start control, based on the theoretical distinction, were identified and the relation between these outcomes and self-control were measured. If stop and start control were differently related to these outcomes, then the distinction between stop and start control would not only be valid but highly useful as well. For instance, if stop control can predict smoking behavior, but start control cannot, then it can be concluded that both forms are really separate forms of self control and that for the prediction of smoking behavior, one need not look at the start control capacity of a person.

Since self-control is proven to be a valuable construct, predicting the capacity for it, or even increasing this capacity, is very useful. The third research question was aimed at finding out whether stop and start control had separate relations with other personality variables, that either increase or decrease the capacity to control behavior.

An overview

The self-control distinction has been tested using the newly developed questionnaire (chapter 2) in different settings and with different samples. Research was conducted cross sectional with paper and pencil tests amongst students (chapter 2 & 3), online amongst adults employed in different occupational sectors, as well as in a field study among employees of a Dutch insurance and risk management company (chapter 4). Longitudinal research was conducted at three different Dutch juvenile judicial institutions (chapter 5).

The second chapter introduces the distinction between stop and start control, provides theoretical background as well as previous research examples of the implicit existence of both constructs. It investigates the possibilities for the distinction using an expert group and two samples of students. Using items from three separate self-control questionnaires, a stop and start control questionnaire with two separate scales for stop and start control was constructed. Finally, this instrument was used to measure stop and start

control and both forms of self-control are related to affective and behavioral outcomes.

The third chapter extends the stop and start control theory by relating both forms to other personality measures that were expected to differently relate to the capacity to control behavior. Using students as a sample, this research showed again that stop and start control can be measured separately and that their scores relate differently to personality traits such as impulsivity, conscientiousness and regulatory focus. This chapter also establishes some boundaries for the distinction and for self-control in general.

The fourth chapter tests the proposed distinction in an adult working sample. The questionnaire devised in chapter two was posted online and the stop and start control ratings were related to contextual performance measures. Again, the distinction between stop and start control was tested and both constructs displayed different relations with, for instance organizational citizenship behavior and personal initiative. These tests were repeated using a sample of working adults in a single Dutch insurance and risk management company.

The fifth chapter investigates the possibility for self-control capacity to increase over time. Using a sample of problem youth in juvenile institutions the distinction between stop and start control was tested again and both constructs were related to performance measures. The performance measures were objective, given by the mentors of the youths and displayed different relation with stop and start control. Another personality variable, core self-evaluation, was used as a predictor of self-control and showed some promising results.

The sixth and final chapter provides the discussion of this dissertation. The overall results will be compared and discussed together with some of the issues that were raised in chapters 2, 3, 4, and 5. Some limitations to the research will be mentioned and the theoretical implications will be presented. Finally, some opportunities for future research will be presented.

Chapter 2

Stop and start control: A distinction within self-control¹

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Abstract

A theoretical distinction within self-control, between stop control and start control, was investigated in two studies. Study 1 consisted of a pilot study in which expert ratings of existing self-control items were used to distinguish between stop and start control items, and a confirmatory factor analyses of these items using a student sample ($N = 474$). Also, stop and start control were related to overall affect and behavioral outcomes. Stop control was negatively related to negative affect, whereas start control was positively related to positive affect. Study 2 ($N = 226$) replicated some of these findings; stop control was the best predictor (-) of smoking and alcohol consumption whereas start control was the best predictor (+) of exercising and studying.

Introduction

Self-control has been defined as the exertion of control over the self by the self (Muraven & Baumeister, 2000). It is involved with different areas such as thoughts, emotions, performance and attention (Baumeister, Heatherton, & Tice, 1994; Karoly, 1993), and has been proven to be beneficial in many different domains, such as dietary restraint (Kahan, Polivy, & Herman, 2002), eating disorders, mental health (Tangney, Baumeister, & Boone, 2004), physical health (De Ridder & De Wit, 2006), addictions, aggression (DeWall, Baumeister, Stillman, & Gaillot, 2007), and criminality (Hirschi, 2004). These studies show that self-control is paramount in pursuing long-term and higher order goals.

The finding that a lack of self-control is related to problematic behaviors, such as drinking and smoking (Baumeister et al., 1994; Muraven & Shmueli, 2006), makes it clear that self-control is often involved in preventing *undesirable* behavior. In some cases, however, self-control is needed to initiate *desirable* behavior. This is shown by the findings that high self-control is related to better academic performance (Duckworth & Seligman, 2005; Shoda et al., 1990) and positive interpersonal relations (Finkel & Campbell, 2001). Regarding close relations, Finkel and Campbell found that self-control is related to accommodation, which consists both of inhibiting destructive responses to potentially destructive behavior from a partner, as well as engaging in constructive responses. Engaging in *desirable* behavior in relations, for example to talk to your partner, is as important as inhibiting *undesirable* acts of getting angry or walking away. The current research investigates such different outcomes of self-control and suggests a distinction between two types of self-control that could differentially predict and explain these outcomes: stop control and start control. The relevance of self-control in general has already been demonstrated and a more clearly defined construct could further self-control research as it allows for more pinpointed investigation of the relations, causes and outcomes of self-control.

Although self-control is partly situation-dependent and may vary depending on factors such as previous self-control efforts (Muraven & Baumeister, 2000), emotions (Baumeister, Zell, & Tice, 2007), affect (Tice, Baumeister, Shmueli, & Muraven, 2007), and distress (Tice, Bratslavsky, & Baumeister, 2001), research has shown that people also systematically differ in their ability for self-control. Consequently, many studies have operationalized self-control as a stable trait (e.g., Brandon, Oescher, & Loftin, 1990; Tangney et al., 2004). Based on this research, in the present research we adopt the view of self-control as a trait-like quality.

The current paper should be considered as a first step in answering two questions about the stop and start control distinction within self-control: is it appropriate, and is it useful? The first question refers to the actual theoretical distinction and whether it fits empirical findings. We will answer this question

by relating the distinction to existing theories on self-control and related constructs. Also, the distinction is appropriate if stop and start control can be empirically distinguished within the self-control construct. We will show this to be the case by factor analyzing different sets of self-control items. The second question refers to the relationship of stop and start control with other constructs. We test the validity of both constructs by relating provisional measures of stop and start control to overall affect and behavioral outcomes, and showing that their relations with those outcomes are different.

Two types of self-control

We propose that there are two forms of self-control, one for inhibiting behavior and one for initiating behavior. To support and explain our distinction, three examples of studies in which a similar distinction is made will be mentioned and different paradigms currently used in self-control theory will be discussed. Also different related constructs will be looked at in order to clarify some initial concerns that might arise when introducing the distinction.

Stop and start control in self-control research

In the well known study by Baumeister, Bratslavsky, Muraven, and Tice (1998) food deprived participants were first told not to eat chocolate cookies that were right in front of them and later in the study required to do difficult figure tracing puzzles. Since the aim of the study was to see whether success on a self-control task would be impaired by a previous act of self-control, which it was, both resisting eating cookies (inhibiting) and trying to solve difficult puzzles (initiating) were considered self-control.

Another example is the study by Giner-Sorolla (2001), who differentiated between the self-control in delayed-cost dilemmas (benefit now, cost later or no benefit but also no cost) and the self-control in delayed-benefit dilemmas (cost now, benefit later or no cost but also no benefit). In delayed-cost dilemmas one requires self-control *not to pursue* the benefit as it eventually leads to negative outcomes, as with smoking. In delayed-benefit dilemmas one requires self-control *to pursue* the benefit since the impulse is to avoid the cost, as when preparing for exams. This shows that different types of self-control are required in different settings.

Fishbach and Shah (2006) have shown that individuals have an innate tendency to avoid an activity that “*is positive in the short-term, but negative in the long-term*” and approach an activity that “*is negative in the short-term, but positive in the long-term*”. Participants were requested to respond to activity words that were either ‘positive’ or ‘negative’ by either pushing or pulling a lever. Pushing a lever corresponds here with moving away from the activity and pulling to moving towards the activity. When instructed to push in response to the activity words, responses were fastest when the words represented behavior negative in the long term and when instructed to pull a

lever, responses were fastest for activities that were positive in the long term. This shows both that the distinction between positive and negative long term effects is valid and that participants are able to distinguish between the two, physically as well as psychologically. Fishbach and Shah have therefore shown that a distinction could possibly exist in behavioral control.

Based on this theorizing and research, we propose that two forms of self-control can be distinguished, which we label stop control and start control. Stop control can be defined as self-control aimed at short-term attractive but long-term undesirable behavior, in order not to perform this behavior. Start control is self-control aimed at short-term unattractive but long-term desirable behavior, in order to perform this behavior. What is considered attractive and desirable differs between people. We will explain this using an existing self-control framework. We will then discuss some implications of the distinction using similar theorizing.

Attractiveness and desirability, hot and cold

Self-control has been described as changing automatic responses in a conscious manner (Baumeister & Vohs, 2004). What is automatic and what is conscious has been further theorized by Metcalfe and Michel (1999) in their description of a 2-system framework consisting of a hot, emotional ‘go’ system and a cool, cognitive ‘know’ system. The hot system is reflexive, fast and under stimulus control. The cool system is reflective, slow and under self-control. The separation of the reflexive and reflective functions, or the impulses and constraints, in the description of the self-control process has been extensively described by Carver (2005). These constructs can be used to clarify the attractiveness and desirability of behavior, as described in the definitions of stop and start control.

First the behavior that is the target of self-control is determined by the reflexive system. If a person experiences an impulse for certain behavior then this behavior is attractive. Second, this person also holds some self-set goals, explicit or implicit, determined by the reflective system, the constraint. If behavior is in line with these goals then the behavior is desirable. Third, if the attractive behavior is undesirable, stop control is needed to avoid the behavior. This works similarly for start control. If a person sets goals for certain behavior, using the reflective system, this behavior becomes desirable. If however this behavior is unattractive as determined by the reflexive system (difficult, boring, fatiguing, scary, etc.), start control is needed. In short, the immediate attractiveness of behavior is determined by the reflexive system, and the long-term desirability is determined by the reflective system. Also, the self-control that results after a mismatch between behavior and goals comes from the reflective system.

The previous description of the self-control process emphasizes a feedback loop pertaining to self-set goals. The definitions of stop and start control

however incorporate the sort of behavior that is under control and whether it is in line with self-set goals, not the goals themselves. To further clarify this we should compare the feedback loop with the two forms of self-control. Carver and Scheier (1982) discuss two feedback systems: a negative loop (reducing discrepancy) for approaching a condition that is desirable and a positive loop (increasing discrepancy) for avoiding a condition that is undesirable. Both feedback loops influence self-control: the negative loop enforces behavior that leads to desired outcomes (approach goals) and the positive loop enforces behavior that leads away from negative outcomes (avoidance goals). Because the proposed distinction within self-control does not lie in the sort of goals that one is pursuing, the negative loop can foster both stop control (for instance not smoking to increase physical fitness) and start control (going to the gym to increase physical fitness). The positive loop can also foster both stop control (not smoking to avoid risk of heart disease) and start control (going to the gym to avoid risk of heart disease).

It is important to note that the definitions of stop and start control incorporate attractiveness and desirability, and not type of goal. It has been shown that the framing of a goal, in approach or avoidance terms, has an effect on the pursuit of that goal in and of itself (Förster, Higgins, & Idson, 1998). This should be seen as separate from the difference between stop and start control, which are aimed at the behavior.

Constructs related to stop and start control

Self-control can be related to many different constructs. Theory on extrinsic and intrinsic motivation can be used to further clarify the distinction. For example, Sansone and Thoman (2006) separated goals-defined motivation, the willingness to do a task because it brings a valued outcome, from experience-defined motivation, the enjoyment of the task itself. This fits within the distinction, for example start control is necessary if a person has low experience-defined motivation (e.g., when a task is boring), but has high goals-defined motivation (e.g., when a task leads to a valued outcome).

In their multi-dimensional conceptualization of self-control, Wills, Isasi, Mendoza, and Ainette (2007) differentiated between indicators of good self-control (e.g., soothability, planfullness, and cognitive effort) and poor self-control (e.g., impulsiveness, distractability, and impatience). On the good self-control side we find aspects that can be theoretically linked to high stop control (soothability) and high start control (planfullness) and on the poor self-control side we find aspects that can be linked to low stop control (impulsivity) and low start control (distractability). The approach taken by Wills et al. (2007; see also Wills et al., 2008) encompasses more and different indicators of trait self-control than the current approach in trying to explain different behavioral outcomes. The underlying thought however is similar; self-control cannot simply be divided into high and low self-control but instead consists of different

dimensions or components that interplay when one is trying to control behavior.

Two specific, well-researched constructs need to be mentioned in order to fully appreciate the distinction between stop and start control proposed here: impulsivity and conscientiousness. If taken as indicator of self-control, impulsivity can be argued to be indicative of poor self-control (Wills et al., 2007), whereas conscientiousness may relate to good self-control. However, although strongly related to self-control, impulsivity is not synonymous with low self-control, as shown by Hofmann, Friese, and Strack (2009). Their research shows that impulsivity and self-control together explain behavior far better than either of the constructs alone (Friese & Hofman, 2009).

Disentangling impulsivity from self-control is very much in line with the hot-cool and impulse-constraint distinctions mentioned earlier (Carver, 2005; Metcalfe & Mischel, 1999; see also Strack & Deutsch, 2004). A practical difference between the constructs can be clarified as follows: self-control is only used when an impulse leads to behavior with undesired consequences, without such impulse or without the undesired consequences, self-control is not necessary. Similarly, although conscientiousness is strongly related to self-control (Tangney, et al., 2004), it is not the same. Conscientiousness operates as a personality trait in many different domains, with or without disruptive impulses². Self-control only operates in behavioral domains where there are impulses that deviate actions from self-set goals. By encompassing both impulses (attractiveness) and self-set goals (desirability) into the definitions of stop and start control, the proposed distinction clarifies some of the boundaries of self-control.

Self-control outcomes

Findings from previous research could be used to support the distinction within self-control. The present study focuses on affective and behavioral outcomes of stop control and start control. Two forms of affect are of interest in this study: positive affect and negative affect. Four behavioral outcomes are used in this study: smoking, drinking, studying and exercising.

Self-control and affect

We argue that affect is related to self-control through the behaviors that self-

² This statement's accuracy very much depends on one's definition of conscientiousness. Since conscientiousness is a construct derived from data rather than theory, it can be said to be many different things. In their analyses, McCrae and Costa (1987) included the terms careful, reliable, hardworking, well organized, scrupulous, self-disciplined, neat, punctual, practical, deliberate, ambitious, emotionally stable, self-reliant, businesslike, energetic, knowledgeable, persevering, intelligent, fair, perceptive and cultured. Certainly not all of these traits are linked to, or would require, self-control.

control diminishes or supports. Although there has been little previous research on the direct relationship of trait self-control with overall affect, it is known that success in goal pursuit causes positive affect and that failure in goal pursuit causes negative affect (Oatley & Johnson-Laird, 1987). A successful attempt at controlling the self will therefore likely result in positive affect and self-control failure in negative affect (see also Carver & Scheier, 1998). These effects will occur differently within the proposed distinction.

First, the actions resulting from successful stop control are much less visible than the actions following successful start control, because they entail no actual behavior. Resisting a single cigarette is less rewarding than going to the gym once. Furthermore, stop control is aimed at not doing something and failure is therefore much more visible than success. Smoking one cigarette when one had the intention to quit can be seen as immediate failure, whereas quitting successfully requires resisting cigarettes for weeks or months before it can be seen as successful.

Second, the point at which success is attained is unclear for stop control, since the behavior targeted does not lose its attractiveness instantly. This rationale does not state that successful individual acts of stop control cannot lead to positive affect, but rather that overall low stop control capability is much more likely to cause negative affect than high stop control capability is to cause positive affect. In contrast, start control is aimed at doing something and success is more visible than failure. Failing to go to the gym once, when one had the intention to get more physical exercise, does not entail immediate failure, whereas going to the gym several times can be seen as success. When people fail to do something they have other possibilities to try again before it is seen as failure. Overall low start control capability is therefore less likely to cause negative affect than high start control is to cause positive affect.

Self-control and behavioral outcomes

The most important outcome of self-control is the presence or absence of the behavior it targets. Smoking and studying, for instance, are behaviors related to general self-control (Tangney et al., 2004). Self-control diminishes (smoking) or supports (studying) performing these behaviors. Self-control is also negatively related to alcohol consumption (Muraven & Shmueli, 2006) and positively related to exercising (Kennet, Worth, & Forbes, 2009). We argue that the positive relations with studying and exercising are mainly due to start control, since those are behaviors that are desirable in the long-term. The negative relations however are mainly due to stop control. Smoking and alcohol consumption are behaviors that may be attractive in the short-term but can be undesirable in the long-term.

Sometimes both stop and start control appear to be necessary for the same behavioral outcome: for some behaviors to occur, other behaviors should not occur. This may make the distinction somewhat unclear but we argue that stop

and start control take place in concurrence rather than simultaneously and are effectively different. In the current paper we will touch on this subject but have tried to incorporate behaviors in the studies that require either stop control or start control to perform successfully.

Present research

The different theories and research we have discussed all either point towards a distinction within self control or support the appropriateness and usefulness of the distinction between stop and start control. Previous studies have used a similar distinction and it fits with the current hot-cool self-control framework and theories of related constructs. Also, different established behavioral outcomes of self-control can be clarified and differentiated using the proposed distinction.

The present research will further these insights in two studies. Study 1 was designed to test whether stop control and start control can be empirically distinguished. In the pilot phase of Study 1, experts were used to rate items from three existing trait self-control questionnaires. Based on these ratings provisional scales for stop and start control were constructed, which were administered in two student samples. Confirmatory factor analyses were performed on these scales, and the convergent and divergent validity of stop and start control was examined by relating them to affective and behavioral outcomes. Study 2 was designed as a replication, in order to disconfirm possible alternative explanations.

Six hypotheses were formulated based on the theory discussed before: stop control will relate negatively to negative affect and start control will not (Hypothesis 1), start control will relate positively to positive affect and stop control will not (Hypothesis 2), stop control will relate negatively to cigarette smoking and start control will not (Hypothesis 3), stop control will relate negatively to alcohol consumption and start control will not (Hypothesis 4), start control will relate positively to hours of exercise per week and stop control will not (Hypothesis 5), and start control will relate positively to hours of study per week, and stop control will not (Hypothesis 6). Hypotheses 1 and 2 are based on the differences in visibility of self-control success and failure as well as the point at which success and failure can be discerned and the subsequent affective outcomes. Note that these hypotheses only apply if self-control is seen as a trait. We know from previous research that a positive affect can increase state self-control (Tice et al., 2007) and negative affect can undermine self-control efforts (Tice, Bratslavsky, & Baumeister, 2001). Hypotheses 3 to 6 predict relations between self-control and behavior expressed that are not new; the expected differences in size of the relations for stop and start control however are new.

Study 1

The goal of Study 1 was to investigate whether the theoretical distinction between stop and start control could be empirically supported, based on the factor structure and relations to other constructs. Different questionnaires exist that aim to measure self-control. However, none of these incorporate a distinction between engaging in activities and refraining from them. For the purpose of this study we first created such measures in a pilot.

Pilot phase

A first step in dividing self-control into two dimensions was taken by asking graduated psychologists to classify self-control items of three commonly used general self-control questionnaires as either stop control or start control items. A total of 22 scholars from a university psychology department were used as raters (15 MSc, 7 PhD). Ten were clinical psychologists, six industrial and organizational psychologists, three cognitive psychologists, two biological psychologists and one was educational psychologist.

Raters were given a sheet of items and a coversheet containing instructions and short definition of stop control and start control: “Stop control is self-control for activities that deviate from the goals or wishes of people. The control is aimed at *not doing* something and stops behavior. In other words, a person has to control him or herself to not do something that he or she would otherwise do. Start control is self-control for activities that are in accordance with the goals or wishes of people. The control is aimed at *doing* something and starts behavior. In other words, a person has to control him or herself to do something that he or she would otherwise not do.” Each rater was assigned a set of 30 items out of a 94 item-set and asked to rate each item as either belonging to ‘stop control’ or ‘start control’, or to classify it as ‘not easily discernable’. This last category was added to make sure only items able to distinguish between stop and start control would be included in the final set. All items were rated by at least six different raters.

Measures

The Self Control Scale (Tangney et al., 2004) consists of 26 items and is build around the ability of the self to control itself as reflected by breaking bad habits, resisting temptation and keeping good self-discipline. Items include: “People can count on me to keep on schedule”, and “I blurt out whatever is on my mind” (reverse coded). The Self-Control Schedule (Rosenbaum, 1980) consists of 36 items that describe (a) use of cognitions and self-statements to control emotional and physiological responses, (b) application of problem-solving strategies, (c) ability to delay immediate gratification, and (d) perceived self-efficacy. Items include “When an unpleasant thought is bothering me, I try to think about something pleasant” and “When I do a boring job, I think about the less boring parts of the job and the reward that I will receive once I am

finished”. Based on the factor analytic findings of Rohde, Lewinsohn, Tilson, and Seeley (1990) in their research on the dimensionality of coping, 21 items were selected for the present study. These 21 items clustered together in one factor labeled Cognitive Self-Control. The Ego-undercontrol scale (Letzring, Block, & Funder, 2004) consists of 37 items measuring ego-control. Ego-control is similar to self-control but its measure ranges from undercontrol to overcontrol. Overcontrolled individuals are described as relatively constricted in behavioral or attentive impulses (e.g., delaying of gratification unduly, behaviorally and perceptually constrained and disciplined). Undercontrolled individuals are described as relatively expressive or attentive to internal pushes and pulls (e.g., with immediate and direct expressions of behavior or attention, spontaneity, and unbothered by ambiguities) (Block & Block, 2006). Items include “I tend to buy things on impulse”, and “On the whole I am a cautious person” (reverse scored).

Results

Only nine items were immediately discarded because a majority of the experts could not easily discern stop control or start control and less than a quarter of the items did not receive a majority for one of the two types of self-control. The outcomes further showed that a total of 55 items were described by experts as either stop control or start control with at least a ratio of two to one. Of these, 13 items reached complete consensus among experts and 34 items were rated differently by only one expert.

The ratings of the items by experts were only derived from a short description of the difference between stop control and start control and without much previous knowledge of self-control. These results thus show that the theoretical distinction that can be made between stop control and start control is intuitive and clear. Furthermore, these results allowed us to select items in order to create provisional scales for stop and start control.

Method: Quantitative phase

Study 1 was continued by having participants fill out the stop and start control scales in combination with other measures. Overall affect was chosen as a global measure for success in controlling behavior and reaching self-set goals. Behavioral outcomes were used as a specific measure, indicating success in controlling certain behaviors. Hypotheses 1 to 6 were tested, predicting differential relations with stop and start control for positive affect, negative affect, and self reported smoking, alcohol consumption, exercising, and studying.

Participants and procedure

A sample of 474 students and graduates from a university in The Netherlands filled out an online questionnaire with self-control items (287

women, mean age = 22.74, $SD = 3.56$). Part of the participants also filled out affect measures (Subsample 1, $N = 295$, 175 women, mean age = 22.82, $SD = 3.85$), whereas another part also reported on behavioral measures (Subsample 2, $N = 179$, 112 women, mean age = 22.61, $SD = 3.32$).

Measures

Using the 44 items regarded by most experts as either measuring stop control or start control, 12 items were selected to function as a stop control scale and 12 items were selected to form a start control scale. The selection was based on item-content, such that there were enough self-control domains covered by both scales, without too much difference in self-control domains between the scales. Items with the highest agreement among experts were chosen first unless they duplicated other items. All 24 self-control items were rated on a five-point scale (1 = *completely untrue for me*, 5 = *completely true for me*). See Table 1 for the complete list of items. Cronbach's alphas in the total sample were .79 for the stop control scale and .75 for the start control scale.

Overall affect was measured using the positive affect, negative affect scale (PANAS, Watson, Clark, & Tellegen, 1988). The PANAS consists of 10 mood states for positive affect (e.g., 'attentive' and 'strong') and 10 for negative affect (e.g., 'hostile' and 'guilty'). Participants scored how they generally felt on a five-point scale (1 = *very slightly or not at all*, 5 = *extremely*). The mean scores for the 10 positive affect and negative affect scores were used to create a composite positive affect ($\alpha = .88$) and negative affect ($\alpha = .81$) scores.

The behavioral self-report measure consisted of four questions: "How many cigarettes do you smoke per week?", "How many glasses of alcohol do you drink per week?", "How many hours do you exercise per week?", and "How many hours do you study per week?" Of the participants in Subsample 2, 79.9% was non-smoker, 22.3% did not drink alcohol and 14.0% did not exercise. Because of these highly skewed data, each behavioral measure was transformed into an ordinal scale consisting of six groups. For smoking, alcohol consumption, and exercising, these were '0' and five groups of equal size. For studying these were six groups of equal size; '0' was not present in these data. This procedure reduces the effects of outliers and creates more robust results when used in combination with Spearman's Rho correlations. We compared the results found in this way to results derived from the original scores and a base 10-logarithm of this variable and values were substantially similar and subsequent conclusions remained the same.

Table 1

Factor loadings from a two-factor structure for the items of the stop and start control scales, Study 1.

Item	Stop control	Start control
1. I do many things on the spur of the moment. ^{a*}	.70	
2. I blurt out whatever is on my mind. ^{a*}	.63	
3. I have a hard time breaking bad habits. ^{a*}	.53	
4. I'd be better off if I stopped to think before acting. ^{a*}	.53	
5. I spend too much money. ^{a*}	.51	
6. I tend to buy things on impulse. ^{c*}	.46	
7. Sometimes I can't stop myself from doing something, even if I know it's wrong. ^{a*}	.46	
8. Pleasure and fun sometimes keep me from getting work done. ^{a*}	.48	
9. Sometimes I rather enjoy going against the rules and doing things I am not supposed to. ^{c*}	.45	
10. I lose my temper too easily. ^{a*}	.40	
11. I often interrupt people. ^{a*}	.40	
12. I sometimes drink or use drugs to excess. ^{a*}	.42	
13. When an unpleasant thought is bothering me, I try to think about something pleasant. ^b		.57
14. When I am feeling depressed, I try to think of pleasant things. ^b		.55
15. When I am depressed, I try to keep myself busy with things that I like. ^b		.53
16. In order to overcome bad feelings that accompany failure, I often tell myself that it is not so catastrophic and that I can do something about it. ^b		.41
17. When I find it difficult to settle down to do a certain job, I look for ways to help me settle down. ^b		.50
18. When I do a boring job, I think about the less boring parts of the job and the reward that I will receive once I am finished. ^b		.48
19. If I find it difficult to concentrate on a certain job, I divide the job into smaller segments. ^b		.44
20. When I am in a low mood, I try to act cheerful so my mood will change. ^b		.48
21. When I have to do something that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it. ^b		.36
22. When I find that I have difficulties in concentrating on my reading, I look for ways to increase my concentration. ^b		.40
23. When I am faced with a difficult problem, I try to approach its solution in a systematic way. ^b		.35
24. Often by changing my way of thinking I am able to change my feelings about almost everything. ^b		.29

* Reverse coded. ^a Item taken from The Self Control Scale (Tangney et al., 2004). ^b Item taken from The Self Control Schedule (Rosenbaum, 1980). ^c Item taken from The Ego-undercontrol scale (Letzring et al., 2005). *N* = 474

Analyses and results quantitative phase

To assess the factor structure of the two-dimensional self-control measure, confirmatory factor analysis was performed using AMOS 16.0 (Arbuckle, 2006). Two models were fit to the data: a one-factor model in which all 24 items loaded onto a single latent self-control factor and a two-factor model, in which the 12 items expected to represent stop control loaded on one latent factor and the 12 items expected to represent start control loaded on another latent factor. The latent factors were allowed to correlate because although stop and start control are distinct, theoretically they stem from similar reflective systems and as a function of this they might be related. For instance, a higher general focus on long term outcomes affects both stop and start control. Model fit was assessed using multiple indices (cf. Hu & Bentler, 1999). These were the chi-square statistic (χ^2), the standardized root mean squared residual (SRMR), the goodness-of-fit index (GFI), and the root-mean-square error of approximation (RMSEA). Kline (1998) suggested a χ^2/df ratio of less than 3.00.

The Chi-square test was significant for both the two-factor model, χ^2 (251, $N = 474$) = 809.51, $p < .01$, and the one-factor model, χ^2 (252, $N = 474$) = 1441.43, $p < .01$, indicating poor fit to the data. Considering the large sample size and large number of variables in the specified models, this was not surprising. However, the proposed two-factor model (SRMR = .06, GFI = .87, RMSEA = .07, $\chi^2/df = 3.23$) fit significantly and substantially better to the data than the one-factor model (SRMR = .11, GFI = .73, RMSEA = .10, $\chi^2/df = 5.72$), $\Delta\chi^2$ (1, $N = 474$) = 631.92, $p < .01$. Factor loadings in the two-factor model varied between .40 and .70 for stop control and between .29 and .57 for start control. All factor loadings were significant ($p < .05$).

The aim of this study was to test the proposed distinction within self-control, and thus whether the two-factor model fit better to the data than the one-factor model. However, the misfit of the two-factor model was unfortunate and it was important to find out where fit could be improved. Inspection of the modification indices showed that the largest improvements of model fit could be attained by letting the errors of various items within one scale (stop control or start control) relate to each other. The six modification indices ranged from 8.46 to 98.92. Applying them resulted in an acceptable fit, χ^2 (245, $N = 474$) = 555.90, $p < .01$, SRMR = .06, GFI = .91, RMSEA = .05, $\chi^2/df = 2.27$, with the model still displaying the proposed distinction between stop control and start control. The errors that were allowed to correlate³ contained variance explained by a specific domain in which self-control can be involved, for instance saving money (items 5 and 6) and creating positive thoughts (items 13 and 14). Adding the same covariances to the one-factor model did not result in acceptable fit, χ^2

³ In both models, errors from items 2 and 7, 3 and 7, 5 and 6, and 5 and 12 were allowed to correlate (stop control scale) and items 13 and 14, and 13 and 20 (start control scale). See Table 1 for the items.

(245, $N = 474$) = 1077.94, $p < .01$, SRMR = .11, GFI = .79, RMSEA = .09, $\chi^2/df = 4.38$.

Means, *SDs*, alphas and correlations for all variables are displayed in Table 2 (Subsample 1) and Table 3 (Subsample 2). To assess the differential relations of stop control and start control with positive and negative affect and the behavioral outcomes, six regression analyses⁴ were performed. Stop and start control together explained a significant proportion of variance in negative affect and positive affect, as displayed in Table 4. In support of Hypothesis 1 and 2, beta-weights showed that only stop control significantly explained variance in negative affect, with a significantly larger effect size than start control, $t(294) = 1.75$, $p < .05$. Only start control significantly explained variance in positive affect with a significantly larger effect size than stop control, $t(294) = 3.70$, $p < .01$. Both effects were in the expected direction. Regression analyses further showed that stop and start control together explained a significant proportion of variance in cigarette smoking, alcohol consumption, and hours of study, as displayed in Table 5. Beta-weights show that, consistent with Hypothesis 3 and 4, only stop control explained unique variance in cigarette smoking and alcohol consumption with effect sizes significantly larger than start control, $t(178) = 3.65$, $p < .01$, $t(178) = 3.11$, $p < .01$. Contrary to Hypothesis 5, stop and start control did not explain a significant amount of variance in hours of exercise and beta weights did not differ significantly between stop and start control, $t(178) = 0.54$, *ns*. Finally, contrary to Hypothesis 6 stop and start control both explained unique variance in hours of study with beta weights that did not differ significantly, $t(178) = 0.27$, *ns*.

Table 2

Correlations for all variables in Subsample 1, Study 1.

Scale	<i>M</i>	<i>SD</i>	α	1	2	3	4
Stop control	40.26	6.65	.80	-			
Start control	37.00	5.55	.75	.02	-		
Negative affect	2.13	0.67	.88	-.18**	-.02	-	
Positive affect	3.51	0.52	.81	-.02	.26**	-.06	-

Note. Both stop control and start control were measured using the 12-item scale. $N = 295$

** $p < .01$. * $p < .05$.

⁴ All six regressions were repeated with the addition of an interaction between stop and start control. The interaction terms failed to reach significance and did not explain unique variance in the dependent variables.

Table 3

Correlations for all variables in Subsample 2, Study 1.

Scale	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6
1. Stop control	40.37	6.55	.78	-					
2. Start control	37.75	5.42	.74	-.01	-				
3. Cigarette smoking	6.65	20.73	-	-.39**	.03	-			
4. Alcohol consumption	5.74	7.68	-	-.42**	.01	.34**	-		
5. Hours of exercise	1.87	1.59	-	-.04	.05	-.03	-.10	-	
6. Hours of study	20.58	11.07	-	.32**	.15*	-.19*	-.15	.01	-

Note. Spearman correlations were used. Both stop control and start control were measured using the 12-item scale. Variables 3 - 6 are recoded into six ordinal values, original means and standard deviations are given. $N = 179$

* $p < .05$. ** $p < .01$.

Table 4

Regression of positive and negative affect on stop control and start control in Subsample 1, Study 1.

Variable	Negative affect	Positive affect
β Stop control	-.18**	-.02
β Start control	.01	.26**
<i>R</i>	.18	.26
Adjusted R^2	.03	.06
<i>F</i> (df_1, df_2)	4.54 (2, 279)**	10.27 (2, 279)**

Note. Both stop control and start control were measured using the 12-item scale. $N = 295$

** $p < .01$.

Table 5

Regression of smoking, alcohol consumption, exercising and studying on stop control and start control in Subsample 2, Study 1.

Variable	Cigarette smoking	Alcohol consumption	Hours of exercise	Hours of study
β Stop control	-.46**	-.39**	-.01	.30**
β Start control	.06	-.03	.04	.19*
<i>R</i>	.47	.39	.04	.35
Adjusted R^2	.21	.14	-.01	.11
<i>F</i> (df_1, df_2)	23.95 (2, 173)**	15.51 (2, 175)**	0.16 (2, 175)	12.04 (2, 174)**

$N = 179$

* $p < .05$. ** $p < .01$.

Discussion

The purpose of the first study was to test whether a two-factor structure was possible and beneficial in self-control research. The factor analysis showed that a two-factor structure, displaying a distinction between stop control and start control, fit significantly and substantially better to the data than a one-factor general self-control model. Allowing errors of domain specific items to correlate resulted in an increased fit. This indicates that self-control may not only depend on the behavior being active (doing something) or passive (not doing something), but also on the specific domains themselves. Some people have a hard time dealing with money where others have a hard time thinking positive in the face of troubles. Self-control measures are known to cover different domains, for instance the Self-Control Scale (SCS; Tangney et al., 2004) covers five broad domains when factor analyzed. This says more about the specific difficulties of these domains than about the usefulness of self-control as a construct when trying to explain behavioral outcomes. Also, it does not negate the possibility of the stop and start control distinction but proves that more research into self-control is needed to understand where these difficulties arise.

Results overall point towards differential relationships for stop and start control with affect that cannot be explained if both constructs would represent a single trait. Stop control, aimed at not performing behavior that might lead to negative outcomes, is negatively related to negative affect. Start control, aimed at performing behavior that might lead to positive outcomes is positively related to positive affect. Interpretation of these findings can be related to the core difference in stop control and start control as described in the introduction and are in line with control theory (Carver & Scheier, 1982) on affect resulting from goal pursuit and attainment.

Stop control related negatively to both smoking and alcohol consumption whereas start control did not. This gives support to the distinction within self-control. However, stop control also explained unique variance in study behavior, besides the variance explained by start control. This might be due to the fact that studying is a more complex behavior, which may also require refraining from other activities, rather than just focusing on a study activity and using start control for it. Since all participants are students who have many alternatives to studying, stop control may be necessary for them as well. Contrary to the expectations, start control was not related to exercising behavior. A possible explanation is that exercising behavior is too much dependent on specific intentions. All participants in the sample were students and therefore have a personal goal to study, they might not all have had a goal to exercise. Also it is conceivable that for some people exercising does not require self-control at all, which might have been the case in this particular sample.

Although the results of Study 1 indicate that the distinction between stop control and start control is appropriate and useful, given the different ratings

by experts, the two-factor structure, and the differential patterns of relations with overall affect and behavioral outcomes, alternative explanations for these findings need to be considered. We therefore designed a second study.

Study 2

In the first study stop and start control were investigated using scales with existing self-control items. However this resulted in some possible confounds. Items in the stop control scale were on average shorter and reverse coded. Items in the start control scale were somewhat longer and none of the items was reverse coded (see Table 1). Instead of stop and start control, these confounds might be a possible alternative explanation for the two factors and the differential relations with other variables. Therefore the purpose of the second study was to examine whether the distinction within self-control still held when using measures without these confounds.

Method

The items used in Study 2 were rephrased in order to remove the possible confounds. The validity of the new scales was examined by comparing them to an existing general self-control scale. The items were factor analyzed to test the appropriateness of the distinction and again related to behavioral outcome measures in order to test its usefulness. This second study therefore largely replicates Study 1 with the use of a third independent sample and new scales to re-test Hypothesis 3 to 6.

A total of 226 students from a university in The Netherlands (196 women, mean age = 20.15, $SD = 2.33$) filled out a paper questionnaire which included newly developed items to measure stop and start control. The items were based on the previous items used in the two 12-item scales from Study 1 (see Table 1), the findings of these studies and the theoretical distinction between stop control and start control. We first discerned the domains of self-control that the items were involved in and excluded those that were too closely tied to behavioral outcomes (i.e., item 12). Then we identified items measuring intentions, rather than behavior (i.e., item 14). Items that could not be rephrased into discernable behavioral (i.e., 'I am able to ...' or 'I never ...') or effort (i.e., 'I find it difficult to ...') were discarded. Lastly we tried to rewrite each item such that it displayed a condition that calls for self-control (i.e., 'when there is much distraction') and a result indicating self-control ability (i.e., 'I am able to concentrate'). The two scales, nine items for stop control and eight for start control (see Table 6), were created in such a way that they both had an even distribution of reverse-coded items and that all items had approximately the same length, in order to exclude possible confounds.

Table 6

Factor loadings from a two-factor structure for the 17 items of the stop and start control scales, Study 3.

Item	Stop control	Start control
1. During shopping I make impulsive purchases.*	.40	
2. I can easily stop doing something fun that I know to be bad for me.	.49	
3. I do things spontaneously as soon as I think of them.*	.32	
4. I stick to the rules even if I find them unreasonable.	.35	
5. When it comes to spending money, I find it difficult to control myself.*	.53	
6. I never take action without thinking about it first.	.61	
7. I find it easy to save money.	.64	
8. Before I do something I go over the possible consequences.	.56	
9. I find it fun to break rules and do things that I shouldn't.*	.44	
10. I persevere at important tasks, even if I'm afraid something might go wrong.		.44
11. I find it difficult to do tasks that I hate doing.*		.49
12. I find it difficult having to restart something after I thought I was already done.*		.39
13. I'm still able to concentrate when things around me are very hectic.		.45
14. Even if I don't feel like it, I'm able to complete the tasks that needed to be done.		.60
15. When there is much distraction, I'm able to focus on one thing in order to get it done.		.64
16. When my mind wanders while I'm reading, it's easy for me to concentrate on the text again.		.59
17. I'm able to continue working even when severely tired, if something really needs to be done.		.41

* Reverse coded. $N = 226$.

Also included in this second study was the SCS (Tangney et al., 2004) to measure general self-control. The SCS was chosen because it is the self-control scale that is used most often as a trait measure in self-control research. All self-control items were rated on a 7-point scale (1 = *completely disagree*, 7 = *completely agree*). The same behavioral self-report measures were used as in Study 1. Of the participants, 83% were non-smoker, 29% did not drink and 21% did not exercise. The behavioral data were skewed and therefore recoded into ordinal scales with six groups; subsequently Spearman's Rho correlations were applied. Similar to Study 1, results were robust across different transformation methods.

Analyses and results

Two models were fit to the data: a one-factor model and a two-factor model. The Chi-square test was significant for both the two-factor model, $\chi^2 (118, N = 226) = 332.63, p < .01$, and the one-factor model, $\chi^2 (120, N = 226) = 433.40, p < .01$, similar to Study 1. The two-factor model again fit significantly and substantially better to the data than the one-factor model, $\Delta\chi^2 (2, N = 226) = 100.77, p < .01$. The proposed two-factor structure did not fit well to the data (SRMR = .08, GFI = .85, RMSEA = .09, $\chi^2/df = 2.81$), but better than the one-factor model (SRMR = .10, GFI = .80, RMSEA = .11, $\chi^2/df = 3.61$). Factor loadings within the two-factor model varied between .32 and .64 for stop control and between .39 and .64 for start control. All factor loadings were significant ($p < .05$).

An effort was made to look for possibilities for improving the scales. The largest improvements of model fit could again be attained by letting the errors of various items within one dimension relate to each other. This time, however, it only concerned the covariance between errors of items that were either both reverse coded or both not reverse coded. This showed that the replication, using scales with evenly distributed reverse coded items, was indeed beneficial. The 9 modification indices ranged from 4.38 to 45.05. Applying these⁵ resulted in an acceptable fit, $\chi^2 (109, N = 226) = 194.68, p < .01$, SRMR = .071, GFI = .91, RMSEA = .06, $\chi^2/df = 1.79$, with the model still displaying the proposed distinction. Adding the same covariances did not result in acceptable fit for the one-factor model, $\chi^2 (111, N = 226) = 269.60, p < .01$, SRMR = .08, GFI = .87, RMSEA = .08, $\chi^2/df = 2.43$.

Means, SDs, alphas and correlations for all variables are displayed in Table 7. Four regression analyses⁶ were performed in order to test the hypotheses concerning the behavioral outcomes. Stop and start control together could explain variance in cigarette smoking, alcohol consumption, hours of exercise, and hours of study, as displayed in Table 8. Beta-weights show that stop control explains unique variance in number of cigarettes and alcohol consumption and start control explains unique variance in hours exercise and hours of study. All relations were in the expected direction. The effect sizes were significantly different between stop and start control for cigarette smoking, $t(225) = 2.27, p < .05$, alcohol consumption, $t(225) = 1.85, p < .05$, and hours of exercise, $t(225) = 1.88, p < .05$, but not for hours of study, $t(225) = 0.93, ns$. Therefore Hypotheses 3, 4 and 5 were supported and Hypothesis 6 was

⁵ In both models, errors from items 1 and 5, 3 and 9, and 11 and 12 were allowed to correlate (recoded) as well as errors from items 4 and 7, 7 and 8, 6 and 8, 13 and 14, 13 and 15, and 13 and 16 (non recoded). In all correlations, only sets of items are present that belong either both to the stop control scale or both to the start control scale.

⁶ All four regressions were repeated with the addition of an interaction between stop and start control. The interaction terms failed to reach significance and did not explain unique variance in the dependent variables.

not supported.

Both the 9-item stop control scale and the 8-item start control scale separately showed a significant and large positive correlation with the SCS, as displayed in Table 7, indicating that items in both new scales adequately represent self-control. After combining the stop and start control item scores, their total showed a significant and large correlation of .71 with the SCS.

Table 7

Correlations for all variables in Study 2.

Scale	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7
1. Stop control	37.14	7.52	.73	-						
2. Start control	35.54	6.70	.72	.29**	-					
3. SCS	154.55	24.26	.88	.58**	.50**	-				
4. Cigarette smoking	5.49	16.14	-	-.26**	.01	-.23**	-			
5. Alcohol consumption	3.50	5.02	-	-.27**	-.14*	-.27**	.25**	-		
6. Hours of exercise	2.98	3.05	-	.03	.15**	.21**	-.01	.09	-	
7. Hours of study	18.78	9.03	-	.14*	.21**	.28**	.03	-.05	.11	-

Note. Spearman correlations were used. Stop control was measured using the 9-item scale and start control using the 8-item scale. Variables 3 - 6 are recoded into six ordinal values, original means and standard deviations are given. SCS = Self Control Scale (Tangney et al., 2004). $N = 226$

* $p < .05$. ** $p < .01$.

Table 8

Regression analysis of smoking, alcohol consumption, exercising and studying on stop control and start control, in Study 2.

Variable	Cigarette smoking	Alcohol consumption	Hours of exercise	Hours of study
β Stop control	-.19**	-.27**	-.03	.10
β Start control	.09	-.10	.18*	.19**
<i>R</i>	.18	.32	.18	.24
Adjusted R^2	.02	.10	.02	.05
$F (df_1, df_2)$	3.58 (2, 223)*	12.79 (2, 223)**	3.58 (2, 223)**	7.03 (2, 223)**

Note. Stop control was measured using the 9-item scale and start control using the 8-item scale. $N = 226$

* $p < .05$. ** $p < .01$.

Discussion

Stop control explained variance in cigarette smoking and alcohol consumption, behaviors that have long-term undesirable outcomes but can be attractive. Start control did not explain any variance in these behaviors. Start control did explain variance in exercising and studying, behaviors that have desirable outcomes, and stop control did not. As in Study 1 however, the effect sizes for study behavior were not significantly different for stop or start control. Overall, these findings are highly similar to the results of Study 1 and support the differential relations of stop and start control with behavioral outcomes. Study 2 has shown that the findings in Study 1 are not likely to be explained solely by possible confounds due to item phrasing.

In Study 2 stop control did not explain unique variance in studying and start control did explain variance in exercising, which is in line with the hypotheses but different from Study 1. These differences might be due to the improvements made to the scales. Alternatively, although both samples are similar, because data collection took place during different seasons, samples might have differed concerning their alternatives to studying or their intentions for exercise.

Both stop and start control had significant and large correlations with the SCS, indicating that the new scales adequately represent self-control content. However, these provisional measures did not appear to improve on the predictions of the SCS when looking at the behavioral outcomes. Although the new scales for stop control and start control have fewer items than the SCS, their relations with smoking, alcohol consumption, studying and exercising are largely similar. We note that it was not our intention to improve the predictions of self-control for behavioral outcomes, rather we wanted to explain where these relations originate from; either the stop control part of self-control or the start control part. However, we think that it should be possible to improve the predictions of stop and start control over and above those of general self-control and believe part of the solution can be found in identifying more domains of behaviors that depend on one of the two self-control types. Thus, future research should seek to develop more elaborate stop and start control scales which cover multiple self-control domains, and test whether these improve the prediction of behavioral outcomes over general self-control.

General discussion

The goal of this research was to show that general trait self-control can be divided into a stop control dimension and a start control dimension, and that this distinction is appropriate and useful. A review of the self-control literature showed that similar distinctions have been used (Carver, Johnson, & Joormann, 2008; Giner-Sorolla, 2001) and current self-control theories, for instance the hot/cool-system by Metcalfe and Mischel (1999), support it but no empirical investigation into the distinction itself has previously been

performed. Furthermore, the results from Study 1 and 2 empirically supported the distinction within self-control. First, the expert ratings of the pilot study showed that the distinction fits within the current self-control definitions, is intuitive and can be made theoretically salient. Second, both confirmatory factor analyses from Study 1 and 2 showed that separating two types of items actually fit the data better than putting all items together in a general self-control factor. Third, the different relations of positive affect and negative affect with stop and start control in Study 1 showed that the distinction can be empirically supported. Fourth, the relations of stop control and start control with behavioral outcomes found in Study 1 and 2 show that both types of self control differently affect behavior.

Theoretical implications

The distinction between stop and start control fits well with theoretical work on the self-control process (Carver, 2005; Metcalfe & Mischel, 1999), and extends it. Which type of self-control is required and whether it will be successful, theoretically depends both on the dominance of the reflexive or reflective system and whether action or restraint is required. Taking both these effects into account might lead to interesting findings. An example of combining the knowledge in these and other domains is the work of Carver et al. (2008), describing effortful action, effortful restraint, impulsive approach and reflexive inhibition in relation to vulnerability to depression. When successful, stop control (effortful restraint) can override an impulsive approach, and start control (effortful action) can override reflexive inhibition. Many issues still need to be resolved in order to fully understand the relation between the reflective and reflexive functions and their relevance for behavioral control (Corr, 2010).

Another implication is that having a high stop control does not necessarily imply a high start control as well, although the scales were moderately positively correlated in Study 2. This can be useful when looking for antecedents or outcomes of self-control, theoretically, but also when finding ways to increase or aid the use of self-control, practically. For people, knowing their strongest form of self-control can be useful when striving to achieve personal goals. One could, without changing the goal, change the type of behavior used to attain this goal. A good example here is being healthy, if one has difficulties eating less fattening food because of low stop control, one could focus on getting more physical exercise with the use of start control instead.

Sometimes it appears that both processes occur simultaneously and relate to the same behavior. Although both stop and start control may be necessary in order for some behaviors to occur, as we saw in Study 1 where both forms of self-control explained unique variance in study behavior, we argue that they act separately and serially rather than simultaneously. For instance, one has to first stop one's impulse to watch TV, before one can start a study activity.

Also, some behaviors might not require both forms of self-control for all people. Not all students in the samples used, will have required refraining from watching TV or going out, in order to get themselves to study. This might also explain why Study 1 and 2 differ in their relations between stop control and study behavior.

This reasoning could also be used to clarify the importance of the distinction for other research areas. One such area is procrastination, which has already been linked to control processes (e.g., Blunt & Pychyl, 2005; Steel, 2007). Some procrastination may stem from not being able to stop unnecessary behavior, others from just not being able to get started. Procrastinators may also differ in this regard, with some mostly unable to stop when they are being unproductive and others mostly unable to start the work, even when they have nothing else to do. Also, not everybody procrastinates. Is this because some individuals like the activities for which they set goals and do not require self-control or are they better able to use their self-control capabilities as they keep in mind their strongest form of self-control?

The current research also raises questions about the underlying psychological basis of self-control. It is possible that, like in BIS and BAS (Boksem, Tops, Wester, Meijman, & Lorist, 2006) there are biologic or neurologic explanations for the difference in self-control capabilities, for both forms. Also, similar to regulatory focus theory (Higgins, 1997), early learning experience and modeling could play a role. This would fit with the findings of affect. For example, positive experiences with goal attainment early in life could cause a person to invest more in behaviors that require start control, to repeat the positive outcomes, thus gain more experience, and eventually increase their start control ability. Negative experiences with attractive behavior might cause a person to invest in refraining from these activities and thus gain more experience, increasing their stop control ability.

Some items in the scales used may look like they could refer to other personality traits, in addition to stop or start control. As shown by the work on good and bad self-control (Wills et al., 2007), many different constructs can be included in the self-control domain. Although this is true, relatively little is known about the position that self-control takes among other personality variables to form a nomological net. The stop and start control distinction gives room for speculation on this. An example of a Big Five trait has already been mentioned; conscientiousness would relate positively mainly to start control. However, low impulsivity which is sometimes seen as part of conscientiousness, may relate positively mainly to stop control. The implication here is that simple positive or negative relations of different personality traits with general self-control will not paint a complete picture.

Limitations and future research

This paper merely sets the first step in distinguishing between the two types

of self-control and some limitations need to be mentioned to accompany the findings. First, only a few self-control domains were included in the newly developed scales. We tried to identify areas that require self-control for most people, like saving money, since most people self-set goals of having money. Future research should however try to identify more, and more widely applicable self-control domains to include in the stop and start control scales. We acknowledge that our method of developing scales is only one of many possibilities and encourage others to construct better measures.

Second, some hypotheses were not supported, possibly because the specified behaviors did not require self-control in the particular samples. The samples used in Study 1 and 2 existed only of students and only four behaviors were measured. This raises the question whether the distinction is useful in work settings and clinical settings as well. More and different outcomes might have strengthened the results. Future research should further build on the nomological net of the distinction studying the relationships of stop and start control with more different specific behaviors as well as with trait measures such as the Big Five and impulsivity, and apply these in different samples.

Third, variables were assessed using self-report measures. Although we cannot completely rule out the possibility that common method variance might be partially responsible for some of the results, it seems not to threaten our conclusions for the *differential* effects of stop and start control, since both are measured the same way. Furthermore, the behavioral outcomes are objective in nature and all questionnaires were administered anonymous, attenuating social desirability responding concerns. However future research should use different measurement techniques such as other-reports or objective assessments. There are also other ways to measure self-control than questionnaires, for example a cold-pressor task (Schmeichel & Zell, 2007).

Future research could also expand on the approach taken in Study 1 by incorporating different types of affect. In the current research we used positive and negative affect as indicators of overall successful goal attainment. More specific types of affect, for instance anxiety, dejection, relief, and elation (Higgins, 1996) could possibly explain more about the exact interplay of self-control, goals, and behavior.

As a separate point we note that the focus of this paper has been on trait self-control and mainly the behavioral aspect of it. Self-control is proven to be situation dependent as well (e.g., Muraven & Baumeister, 2000; Baumeister et al., 2007) and applicable in different areas (Baumeister et al., 1994; Karoly, 1993). Future research should examine whether stop and start control are distinguishable in state self-control as well and whether the distinction is useful for all areas of self-control including thoughts, emotions, performance and attention (Baumeister, Heatherton, & Tice, 1994; Karoly, 1993).

In conclusion, self-control is an important construct for many different research domains. In the research that is currently available a distinction

between two forms of self-control can be discerned. As laid out in this paper, a distinction can be made between stop control and start control, which fits with different theories on self-control. The distinction is both appropriate and useful and applies to behavioral outcomes previously related to self-control. Based on this we are confident that stop control and start control form a valuable distinction within self-control.

Chapter 3

Stop and start control: Building a nomological net⁷

⁷ This chapter is submitted for publication as: De Boer, B. J., Van Hooft, E. A .J., & Bakker, A. B. (2011). *Stop and start control: Building a nomological net*. Manuscript submitted for publication.

Abstract

This research examined different bases for inter-individual differences in self-control capacity, using the Stop and Start Control Questionnaire, developed and validated by De Boer, Van Hooft, and Bakker (2011). Based on the theoretical assumption that experience with self-control will increase self-control capacity, hypotheses for the relations of seven different self-regulation traits with stop and start control were constructed and tested ($N = 185$). Prevention and promotion-focus, behavioral inhibition and behavioral activation system, action control, impulsivity, and conscientiousness, were shown to be differently related to stop and start control. Stop control displayed the highest correlations with the behavioral activation system (-), impulsivity (-), and conscientiousness (+). Start control displayed the highest correlations with action-orientation (+), conscientiousness (+), and prevention-focus (-).

Introduction

The beneficial effects of self-control have been well documented in different fields, such as academic performance (Duckworth & Seligman, 2005), addiction, aggression (DeWall, Baumeister, Stillman, & Gaillot, 2007), and physical health (De Ridder & De Wit, 2006). The ability to control behavior fluctuates within individuals, depending on emotions (Baumeister, Zell, & Tice, 2007), distress (Tice, Bratslavsky, & Baumeister, 2001), and previous self-control efforts (Muraven & Baumeister, 2000). However, other research (e.g., Tangney, Baumeister, & Boone, 2004) demonstrated that interpersonal differences in the ability to control behavior exist that are relatively stable over time. The present research is aimed at investigating possible influences of self-regulation constructs that can explain why interpersonal differences in self-control capacity exist. Various trait-like qualities that are important to the self-regulation process will be related to self-control: prevention and promotion-focus (Higgins, 1997), behavioral inhibition and behavioral activation system (Gray, 1994), action-orientation (Kuhl & Beckmann, 1994), impulsivity, and conscientiousness. Insight into the interrelatedness of self-control with other self-regulation constructs will be beneficial for further developing the self-control construct and its nomological net.

Self-control is required in choice dilemmas, which are complex and incorporate many aspects that can differently affect the outcomes of the dilemma. For example, studies by Giner-Sorolla (2001) showed different outcomes for affect of self-control in delayed cost-dilemmas versus self-control in delayed benefit-dilemmas. Delayed cost-dilemmas are choice dilemmas in which there is the choice to perform behavior that is rewarding in the short-term, but that can have negative effects in the long-term (e.g., smoking). The option that would require the most self-control is not performing the behavior; one has to forgo an instant reward in order not to suffer negative consequences later in time. In delayed benefit dilemmas there is the choice for behavior that is unattractive in the short-term, but that can have positive effects in the long-term (e.g., studying for exams). Although self-control is required in both dilemmas, different outcomes of these dilemmas are shown, based on differences in the dilemmas themselves.

Whether self-control efforts stop behavior with negative outcomes or start behavior with positive outcomes is apparently an important aspect of choice dilemmas. In regards to behavioral self-control, a distinction can be made between stop control and start control (De Boer, Van Hooft, & Bakker, 2011). Stop control is defined as self-control aimed at short-term attractive but long-term undesirable behavior, in order not to perform this behavior. Examples of stop control are choosing not to have that extra piece of cake at a birthday party, or to refrain from responding in a rude manner to someone who has been impolite to you. Eating cake or reciprocating rudeness can be very attractive but will thwart long-term or higher order goals such as losing weight or being a

good person. Start control is self-control aimed at short-term unattractive but long-term desirable behavior, in order to perform this behavior. Examples are going to a gym, or apologizing to someone. Although putting in extra effort to get more physical exercise or to admit you were wrong may not be very attractive at first, it will lead to valued outcomes as the behaviors are in line with personally held long-term or higher order goals.

Previous research found some initial support for the validity of distinguishing between two separate forms of self-control (De Boer et al., 2011; De Ridder, De Boer, Lugtig, Bakker, & Van Hooft, 2011). For example, in a study using university students, De Boer et al. found that stop control, but not start control, was negatively related to alcohol consumption and smoking cigarettes. Furthermore, start control, but not stop control, was positively related to studying and exercising. Drinking and smoking, in general, are behaviors one can have an urge for, but would like to refrain from. Studying and exercising are behaviors one would like to perform, but which can be difficult or tiring.

The theory behind stop control and start control (De Boer et al., 2011) states that interpersonal differences in self-control capacity exist for both forms of self-control. Delayed cost-dilemmas are therefore different from delayed-benefit dilemmas for all people. Furthermore, a delayed cost-dilemma (or benefit-dilemma) may be perceived differently by different people. For instance, people can attribute more value to the presence of positive outcomes than to the absence of negative outcomes, be more focused on achieving gains than avoiding losses, or generally be more inclined to actively influence outcomes through behavior. These values, preferences, and strategies can be captured in different self-regulatory traits. We argue that these traits influence the experience one has had with self-control of behavior and subsequent outcomes. The personality traits will influence the choices a person makes for behavior, and therefore indirectly the choice for the use of self-control. This will influence the experience with self-control. More successful experience will lead to a greater self-control capacity. We will now discuss specific trait-like qualities that can influence the self-control capacity through this process.

Relating self-control to personality

Prevention and promotion foci

Regulatory focus theory (Higgins, 1997) distinguishes between prevention-focus and promotion-focus as separate self-regulation mechanisms. Prevention-focused individuals are guided by security needs, strong oughts and loss/non-loss situations. They have the tendency to use avoidance as a strategic means and are sensitive to the presence or absence of negative outcomes. Promotion-focused individuals are guided by nurturance needs, strong ideals, and gain/non-gain situations. They have the tendency to use approach as a strategic means and are sensitive to the presence or absence of positive outcomes.

Although the two foci can be induced in experimental settings, they can also be measured as trait-like concepts describing people's preference for a promotion and a prevention-focus (Shah, Higgins, & Friedman, 1998).

Regulatory focus likely influences the experiences with self-control in choice dilemmas. Because prevention-focus stimulates individuals to avoid negative outcomes, highly prevention-focused individuals are familiar with avoiding possible missteps and have gained experience in inhibiting behavior that is undesirable in the long-term. Repeated exposure to these choice dilemmas will lead to greater capacity for choosing not to perform the possibly harmful behavior. Being highly prevention-focused is therefore proposed to be beneficial for developing stop control capacity.

People high in prevention-focus use avoidance as a strategic means and will not eagerly commit themselves to difficult or high-risk goals. Sensitivity to the presence or absence of negative outcomes will cause a reduced readiness for engaging in productive behavior with a chance of failure. The lack of experience with choice dilemmas in which some adversity needs to be overcome in order to gain long-term benefits is not beneficial to the start control capacity. Therefore, we predict prevention-focus to relate positively to stop control and negatively to start control (Hypothesis 1a).

Highly promotion-focused people are sensitive to the presence or absence of positive outcomes which will make it harder to use stop control, since this form of control inhibits directly rewarding behavior. Using approach as a strategic means will not be beneficial to the capacity for stop control since this strategy will lead to greater experience with unsuccessful delay of gratification. Not performing long-term undesirable behavior is more difficult when one is more prone to spot the benefits of the behavior in the short-term.

A promotion-focus leads people to look for possibilities for achieving success and set their personal goals accordingly. Using approach as a strategic means will lead to more opportunities in which performing difficult behavior ensures valued outcomes. Successful experiences with long-term goals which require start control will increase the ability for this form of control. Thus in contrast to prevention-focus, we predict promotion-focus to relate negatively to stop control and positively to start control (Hypothesis 1b).

Behavioral inhibition and behavioral activation systems

The Behavioral inhibition system (BIS) and the Behavioral activation system (BAS) are two orthogonal motivational systems as proposed by Gray (1994) that underlie behavior (Carver & White, 1994). The BIS controls the experience of anxiety in response to anxiety-relevant cues and is theorized to mediate sensitivity to signals of punishment, non-reward and novelty. It inhibits behavior that may lead directly to negative or painful outcomes. The BAS controls the appetitive motivation and mediates the sensitivity to signals of reward, nonpunishment and escape from punishment. The BIS and BAS are

part of the reinforcement sensitivity theory, which has recently been revised (Corr, 2004; Gray & McNaughton, 2000)⁸. Furthermore, conceptual distinctions can be made within the BAS (Smillie, Jackson, & Dalgleish, 2006). However, we believe that the hypotheses formulated in the present research hold true for both the original and the revised reinforcement sensitivity theory and we did not expect any differences for the BAS subscales. The present research therefore focuses on BIS and BAS as represented in the BIS/BAS scales (Carver & White, 1994).

Gray's theory (1994) states that BIS is involved with the inhibition of behavior and that BAS is involved with the beginning of behavior. BIS will likely be positively related to stop control, which ensures inhibition. Sensitivity to signals of punishment is beneficial for stop control capacity as a greater experience of successfully abstaining from undesirable behavior will be developed with it. However, this sensitivity may also result in extra care when dealing with delayed benefit-dilemmas and thus diminish start control capacity. The experience of anxiety will prohibit behavior towards a long-term goal if the short-term outcomes are negative. Less successful experience with difficult but long-term desirable behavior will diminish start control capacity. We expected BIS to relate positively to stop control and negatively to start control (Hypothesis 2a).

The BAS controls the appetitive motivation and mediates the sensitivity to signals of reward, which might be detrimental in delayed-cost dilemmas. Short-term outcomes that are seen as positive weigh in more heavily on a choice than long-term negative outcomes. This will negatively influence the capacity for stop control. The BAS will however cause a beginning or increase of movement toward goals. The sensitivity to rewards will make it more likely that difficult goals are chosen, increasing experiences with them. Greater experience with successful completion of these goals will foster a larger start control capacity. We expected BAS to relate negatively to stop control and positively to start control (Hypothesis 2b).

Action control

Kuhl and Beckmann (1994) introduced the concept of action control as a self-regulatory mechanism guiding the initiation and maintenance of intentions. People with low levels of action control can be characterized as state-oriented individuals, whereas people with high levels of action control are referred to as action-oriented individuals (Diefendorff, Hall, Lord, & Streat, 2000). State-orientated people are characterized by impaired facilitation of behavior due to preoccupation or hesitation. Action-orientated people have a

⁸ Originally the reinforcement sensitivity theory also included the Figh/Flight system, which has been renamed Fight-Flight-Freeze system in the revised theory. Within the revised reinforcement theory, the BIS scale (Carver & White, 1994) actually assesses BIS-FFFS (Smillie, Pickering, & Jackson, 2006).

high capacity to engage and are more able to translate intentions into action (Kuhl, 1994). Especially this last aspect makes it likely that strong action control (i.e., action-orientation) will benefit general self-control capacity. We expected action control to relate positively to both stop control and start control, such that both stop control and start control are higher for more action-oriented individuals and lower for more state-oriented individuals (Hypothesis 3a).

Kuhl (1994) states that individuals low on action control (i.e., state-orientated people) display excessive inhibition of behavior. However, this form of inhibition is itself an impulse, since it stems from a personal preference for maintaining a state. The inhibition therefore is not the same as effortful inhibition or stop control, which is aimed at resisting impulsive actions. Instead of high stop control, we argue that the impaired facilitation of behavior for state-oriented people will be related to a low start control.

In general, action control theory is more concerned with initiation of behavior towards achieving goals than with effortful inhibition of behavior. The effects of having strong action control (i.e., have an action-orientation) are therefore likely most notable in the capacity for start control and action-oriented people, with a high capacity to engage, will be more able to perform behavior for which there are conflicting impulses. We therefore expected that action control has a larger positive relation with start control than with stop control (Hypothesis 3b).

Conscientiousness and impulsivity

Personality theory has posited self-control as a subtrait of conscientiousness, distinct from other subtraits, such as industriousness, order, and virtue (Roberts, Chernyshenko, Stark, & Goldberg, 2005). Also, self-control has been referred to as low impulsivity. Although both conscientiousness and impulsivity are related to self-control (e.g., Tangney et al., 2004; Friese & Hofmann, 2009), the two constructs are not synonyms for self-control, as they do not overlap entirely with the self-control construct. Conscientiousness is a higher-order trait that is involved with many different domains, not all of which incorporate choice dilemmas. Similarly impulsivity has been shown to operate separately from self-control, and using both as predictors of choice outcomes gives better predictions than using either of the two separately (Hofmann, Friese, & Strack, 2009). Nevertheless, because self-control is a lower-order factor within conscientiousness related to both the proactive and the inhibitive aspect of conscientiousness (e.g., Roberts et al., 2005), we hypothesize conscientiousness to relate positively to both stop control and start control (Hypothesis 4).

Whiteside and Lynam (2001) developed a four factor model of impulsivity (UPPS model), differentiating between urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking. Urgency reflects tendencies to perform

regrettable behaviors due to intense negative affect. Premeditation captures the most frequently conceptualization of low impulsivity and refers to the tendency to think before acting. Perseverance is the ability to stay with a task until it is finished. Sensation seeking is the tendency to seek adventure and excitement. Impulsivity overall has a distinct focus on the here-and-now, which is especially reflected in the urgency and sensation seeking factors. For both forms of self-control, the here-and-now option is less desirable in the long-term. If a person has the tendency to perform behaviors due to an (immediate) affective state, does not think before acting and is mainly focused on excitement, self-control capacity is likely low. We expected impulsivity to be negatively related to both stop control and start control (Hypothesis 5a).

Most impulses that come up are for doing something. That is, impulses for certain behavior can come up at any moment and are elicited by different aspects of the environment. Impulses not to perform certain behavior can only come up after an intention has been formed for the specified behavior. For instance, without an intention to go to the gym, one cannot have thoughts of fatigue, boredom, or pain that can prevent the behavior. Apart from the perseverance factor, impulsivity mainly concerns behaviors that are attractive in the short-term. We therefore expected that impulsivity has a larger negative correlation with stop control than with start control (Hypothesis 5b).

General self-control

In order to investigate the possible merits of distinguishing between the two forms of self-control we compared the correlations of the above-mentioned personality traits with stop and start control to the correlations of these traits with general self-control. For regulatory focus and BIS/BAS, the expected correlations of stop and start control are in different directions. Considering general self-control to be a mix of stop and start control, these opposite effects would then cancel each other out. We therefore did not expect general self-control to be related to prevention-focus, promotion-focus, BIS, or BAS. However, action control (positively) and impulsivity (negatively) are both expected to relate to stop and start control, but with different effect sizes for stop control and start control. We therefore expected general self-control to be positively related to action-orientation and negatively related to impulsivity, with effect sizes in between those of stop and start control (Hypothesis 6).

Recently, a distinction similar to stop and start control has been proposed within the Short Self-Control Scale (SSCS; Tangney et al., 2004) which is a measure for general self-control. De Ridder et al. (2011) used the terms inhibitory self-control, referring to self-control that is used to prevent undesired behavior, and initiatory self-control, referring to self-control used to engage in desired behavior. Based on the similarities of this distinction with the stop and start control distinction, we expected stop control to be highly positively related to inhibitory self-control and significantly more so than to initiatory

self-control (Hypothesis 7a) and start control to be highly positively related to initiatory self-control and significantly more so than to inhibitory self-control (Hypothesis 7b).

Method

Participants and procedure

Questionnaires were administered to 185 psychology students from a Dutch university. Mean age was 21.04 ($SD = 3.24$) and 68.6% of the participants were female. Participation was voluntary and rewarded with course credits.

Measures

Unless indicated otherwise items were scored on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Cronbach's alphas are displayed in Table 1.

Stop and start control were measured using the scales devised and validated by De Boer et al. (2011). The stop control scale has nine items, including: "I can easily stop doing something fun that I know to be bad for me". The start control scale has eight items, including: "Even if I don't feel like it, I'm able to complete the tasks that needed to be done". These scales have previously displayed adequate reliabilities ($\alpha = .73$ for stop control, and $\alpha = .72$ for start control) and a factor analysis of the items showed that a two-factor model, representing the stop and start control scales, had a better fit to the data when compared to a one-factor model (De Boer et al.).

General self-control was measured using the SSCS (Tangney et al., 2004) which consists of 13 items, including: "I blurt out whatever is on my mind" (reverse coded). *Inhibitory and initiatory self-control* were measured using several items of the SSCS as selected by De Ridder et al. (2011). Inhibitory self-control consists of six items (e.g., "I refuse things that are bad for me") and initiatory self-control consists of four items (e.g., "I am able to work effectively toward long-term goals").

Regulatory focus was measured using Lockwood, Jordan, and Kunda's (2002) two scales, consisting of nine items for prevention-focus (e.g., "In general I am focused on preventing negative events in my life") and nine items for promotion-focus (e.g., "I often imagine myself experiencing good things that I hope will happen to me").

BIS/BAS was measured using the BIS/BAS Scales (Carver & White, 1994; Franken, Muris, & Rassin, 2005). The BIS scale consists of seven items (e.g., "I worry about mistakes"). The BAS scale consists of 13 items (e.g., "When I see an opportunity for something I like, I get excited right away").

Action control was measured using the hesitation subscale of the Action Control Scale (Kuhl, 1994). This scale consists of eight items that each have two response options; one action-orientated and one state-orientated. The total number of action-orientated responses that participants select is their value for action control, with higher scores indicating a stronger action-orientation and

lower scores indicating a stronger state-orientation. An example item is: “When I am facing a big project that has to be done:” with the response options “I often spend too long thinking about where I should begin” (state), and “I don’t have any problems getting started” (action).

Conscientiousness was measured with twelve items from the NEO-PI-R (Hoekstra, Ormel, & De Fruyt, 1996). An example item is: “When I make a promise, people can count on it that I will keep that promise.” *Impulsivity* was measured using the impulsiveness subscale of the I₇ questionnaire (Lijffijt, Caci, & Kenemans, 2005). The I₇ consists of 19 items which mostly reflect the premeditation, urgency and sensation seeking factors of impulsivity in the UPPS model (Whiteside & Lynam, 2001). For this study, no distinctions within impulsivity were used. Items include: “Do you get so ‘carried away’ by new and exciting ideas, that you never think of possible snags?” Response options for all items were ‘yes’ and ‘no’.

Results

Table 1 displays means, standard deviations, and correlations for all variables. Results partially support Hypothesis 1a but not 1b. Prevention-focus was negatively correlated to start control and not significantly correlated to stop control. Promotion-focus was not significantly correlated to start control or stop control.

BIS was positively correlated to stop control and negatively correlated to start control. BAS was negatively correlated to stop control but its positive correlation with start control failed to reach significance. This fully supports Hypothesis 2a and partially supports Hypothesis 2b.

Supporting Hypotheses 3a-b, action/state-orientation was positively related to stop control and start control. The correlation with stop control was significantly smaller than the correlation with start control, $t(182) = 2.96, p < .01$.

Supporting Hypothesis 4, conscientiousness was positively related to stop control and start control. The correlations between stop control and conscientiousness and between start control and conscientiousness were not significantly different, $t(182) = 0.49, ns$.

Impulsivity was negatively related to stop control and start control. The correlation between stop control and impulsivity was significantly larger than the correlation between start control and impulsivity, $t(182) = 7.20, p < .01$. This supports Hypotheses 5a and 5b.

Table 1

Means, standard deviations, α 's, and correlations for all variables

	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7	8	9	10	11	12
1. Stop control	4.17	0.85	.74	-											
2. Start control	3.96	0.71	.62	.21**	-										
3. General self-control	3.94	0.84	.81	.57**	.37**	-									
4. Inhibitory self-control	3.58	1.00	.76	.57**	.27**	.86**	-								
5. Initiatory self-control	4.43	0.88	.44	.39**	.42**	.80**	.45**	-							
6. Prevention focus	3.76	1.04	.83	.10	-.29**	-.09	.01	-.20**	-						
7. Promotion focus	5.06	0.85	.84	.01	.01	.20**	.12	.19**	.15*	-					
8. BIS	4.97	1.01	.84	.17*	-.26**	.04	.03	-.03	.53**	-.02	-				
9. BAS	5.02	0.65	.81	-.31*	.12	-.10	-.17*	-.02	-.01	.46**	-.19**	-			
10. Action control	3.58	2.15	.70	.21**	.46**	.43**	.26**	.46**	-.17*	.16*	-.26**	.19*	-		
11. Impulsivity	6.10	4.18	.82	-.71**	-.22**	-.54**	-.48**	-.40**	.01	.04	-.12	.33**	-.13	-	
12. Conscientiousness	4.71	0.79	.82	.38**	.42**	.68**	.47**	.68**	-.11	.38**	.01	.22**	.50**	-.33**	-

Note. BIS = Behavioral Inhibition System, BAS = Behavioral Activation System. $N = 185$.

** $p < .01$. * $p < .05$.

General self-control was not significantly correlated to prevention-focus, BIS, or BAS. Self-control was however related to promotion-focus, as well as to action control, and impulsivity. The correlation of action control with general self-control was significantly larger than the correlation with stop control, $t(182) = 3.51$, $p < .01$, but not significantly smaller than with start control, $t(182) = 0.41$, *ns*. The negative correlation between impulsivity and general self-control was significantly smaller than the negative correlation between impulsivity and stop control, $t(182) = 3.59$, $p < .01$, as well as larger than the negative correlation between start control and impulsivity, $t(182) = 4.53$, $p < .01$. This largely supports Hypothesis 6.

Stop control was positively related to inhibitory self-control, and this correlation was significantly larger than the correlation between stop control and initiatory self-control $t(182) = 2.86$, $p < .01$. Start control was positively related to initiatory self-control, and this correlation was significantly larger than the correlation between start control and inhibitory self-control $t(182) = 2.83$, $p < .01$. This supports Hypotheses 7a and 7b.

Discussion

The present study aimed to investigate underlying mechanisms for interpersonal differences regarding self-control capacity. A variety of self-regulatory traits were expected to differently relate to the ability to stop or start behavior. The results show that the nomological nets of stop control and start control differ, as both forms of self-control were differently related to most of the personality traits. The findings extend previous research by De Boer et al. (2011) indicating that the distinction within self-control has merit and is useful for further developing self-control as a personality construct. The main point of this article is that the outcomes of self-control in choice dilemmas can be related to the way in which people perceive these dilemmas and their subsequent experiences with these dilemmas. The results largely support the hypotheses and show that regulatory focus, BIS/BAS, action control, impulsivity and conscientiousness all relate to people's ability to control their behavior.

Individuals with a high prevention-focus use avoidance as a strategic means and will not eagerly commit themselves to difficult goals with a chance of failure, decreasing their experience with start control. As expected, prevention-focus was shown to negatively relate to start control. People with a high BAS are more sensitive to signals of reward and this will cause them to choose more directly rewarding behavior, even though the long-term effects can be negative. BAS is therefore likely to only create unsuccessful experiences with stop control and was indeed shown to negatively relate to stop control. People that are action-orientated were shown to have a larger capacity for self-control and people with high impulsivity were shown to have a lower capacity for self-control. Both action/state-orientation and impulsivity however were shown to differently relate to stop and start control, indicating that these personality traits differently affect people's perceptions of delayed-cost and delayed-benefit dilemmas.

Four of the 17 correlations that were hypothesized, were not found; stop control was not significantly related to prevention and promotion-focus and start control was not significantly related to promotion-focus and BAS. It is possible that part of these findings can be explained by the questionnaires that were used. The measures for stop and start control are relatively new, as are the constructs they represent. Improving the scales will definitely benefit research. However, the measures for initiatory self-control (De Ridder et al., 2011) also did not correlate with promotion and prevention-focus. Another possibility is that the scales for regulatory focus could have been better chosen. Multiple measures for this construct exist (Fellner, Holler, Kirchler, & Schabmann, 2007; Higgins et al, 2001; Shah et al., 1998) and other questionnaires might have shown different results. Alternatively, it is possible that the expected relations simply do not exist and that the theory needs to be altered. Perhaps regulatory focus is indeed only related to start control and not to stop control. This would

imply that the foci are involved with actual behavior and not with inhibiting behavior and that stop control is unrelated to regulatory focus. The correlation between BAS and start control was not significant but the relation revealed a trend. We believe this finding may be due to a power problem.

Theoretical implications

Interpersonal differences of various self-regulation traits demonstrated to relate to the differences in people's capacity to control behavior. This explains in part why individual differences in self-control capacity exist. It also gives insight into some important aspects of the choice dilemmas and their underlying process. People differ in the extent to which they value losses and gains, which is tapped into by BIS/BAS and in part by regulatory focus, influencing the perception of choice-dilemmas. Action control might be a determinant whether people like to control their behavior at all. State-orientated people may not be interested in changing their ways and create an environment in which not much flexibility is required and little impulses are encountered. This is not to say that one could go entirely without self-control but different levels of control are required for different actions and people may have an upper limit for the amount of self-control they are willing to use.

An underlying assumption of the reasoning which led to the present hypotheses is that (successful) experiences with self-control through choice dilemmas increase self-control capacity. Self-control is often described as a muscle which loses some strength immediately after use (e.g., Muraven & Baumeister, 2000). Extending this metaphor, using a muscle often makes it grow in strength over time, has received relatively little attention (Muraven, Baumeister, & Tice, 1999) but seems highly plausible. The results of the present research therefore should be interpreted as relations between self-regulation traits and self-control capacity which develop over time. Seeking out, selecting and beneficially completing choice dilemmas will gradually increase people's ability to control certain kinds of behavior.

Limitations and future research

Some limitations need to be mentioned to accompany these findings. The present research was performed by means of questionnaires and used a correlational design. Some questionnaires used in this research displayed moderate overlap, both in content and theoretical background. Also, for most traits in this paper, multiple questionnaires exist and the selection of the instruments was based on availability in the native language of the participants and frequency of use in the research domain. Future research could extend the present findings by using different questionnaires. Also, behavioral tests could be used to measure stop and start control instead of questionnaires. For instance, Schmeichel and Zell (2007) showed that general self-control is related

to performance on a cold pressor task; this task can be altered to fit either stop control or start control.

Due to the correlational design it is impossible to draw causal inferences. Although causality is always hard to determine with personality measures, different approaches should be used to further investigate the merits of both distinguishing stop and start control and the relative effects of self-regulatory traits on self-control capacity. Future research should, for instance, compare the direct effect of an induced prevention-focus on people's stop control capabilities, in order to distinguish direct effects of valuing positive outcomes from effects of experience with choice dilemmas.

The present research has focused on several but certainly not all traits that can be linked to self-control. Future research should examine other Big Five traits in addition to conscientiousness, and extend the research to include long-term and short-term goals. Although we did not expect differences for the BAS subscales in this research, future research could potentially benefit from incorporating the full revised reinforcement sensitivity theory; including the new Fight-Flight-Freeze system. Also, the present research was performed using a student sample only. It would be interesting to study these concepts in patient populations who experience problems with stop or start control behaviors, for instance forensic patients and individuals with ADHD.

Conclusion

Self-control is an important but complex construct that has received wide attention in different research areas. The present paper aimed to build a nomological net for stop and start control. High stop control was related to high BIS, action-orientation and conscientiousness and low stop control to high BAS and impulsivity. High start control was related to action-orientation and conscientiousness and low start control to high prevention-focus and BIS. These results explain some of the interpersonal differences in self-control and show that stop and start control are distinct. This nomological net, however, is far from complete. Self-control experiences based on values, preferences, and strategies have proven to be a fertile option but more factors in the self-control process can possibly be discerned.

Chapter 4

Trait self-control at work:
Relating two types of self-control to contextual performance⁹

⁹ This chapter is submitted for publication as: De Boer, B. J., Van Hooft, E. A. J., & Bakker, A. B. (2011). *Trait self-control at work: Relating two types of self-control to contextual performance*. Manuscript submitted for publication.

Abstract

The relationship between self-control and contextual performance was investigated in two separate samples (total $N = 498$). Participants filled out online questionnaires regarding stop control, start control, organizational citizenship behavior, personal initiative, and proactive coping in Study 1; counterproductive work behavior was added in Study 2. Results from both studies are largely similar and show that start control is positively related to organizational citizenship behavior, personal initiative, and proactive coping; and negatively related to counterproductive work behavior. In contrast, stop control is only negatively related to counterproductive work behavior. Results are discussed in relation to the distinction between stop control and start control and the usefulness of trait self-control for work-related outcomes.

Introduction

When in control, individuals do not act on impulse but make a conscious effort to select actions that lead to desired outcomes (Baumeister & Vohs, 2004). Self-control helps to achieve long-term or higher order goals by forgoing short-term pleasures. A person with high self-control is for instance more likely to choose a boring task with long-term valued outcomes over a fun task without such beneficial outcomes. Deciding to perform behavior based on its long-term outcomes is important in many different domains. Self-control has already been extensively studied in fields such as physical health (De Ridder & De Wit, 2006), academic performance (Duckworth & Seligman, 2005), interpersonal relations (Finkel & Campbell, 2001), and criminality (Hirschi, 2004).

In the organizational field, self-control has mainly been investigated indirectly, as part of higher-order traits, such as conscientiousness. Conscientiousness has been shown to be positively related to, for example, job-performance (e.g., Barrick, Mount, & Judge, 2001) and negatively related to counterproductive work behavior (Salgado, 2002). Tangney, Baumeister and Boone (2004) report a .50 correlation between self-control and conscientiousness and state that the capacity for self-control obviously is an important component of behaving in a conscientious manner. Indeed, impulse control was found to be one of six lower-order facets of conscientiousness (e.g., Roberts, Chernyshenko, Stark, & Berg, 2005). Although conceptually and empirically related to conscientiousness, self-control is of and by itself an important construct, because it specifically targets behavior and is essential in acquiring valued outcomes in the face of psychological obstacles, such as resentment or temptation. While conscientiousness is an influential personality factor in many different domains, with or without conflicting goals, self-control is specifically required when disruptive impulses thwart valued long-term goals.

In the current paper, we will focus on the usefulness and relevance of self-control in the context of work. We will first discuss why self-control could be of importance to the organizational field and then turn to a distinction between two types of self-control and apply it to contextual work performance. We will then present a pilot study showing that a recently developed self-control measure can be applied in this context and is different from conscientiousness, before we discuss two studies in which self-control was empirically related to contextual work performance.

Self-control at work

Control, or the capacity to regulate behavior, has been an important concept in the work and organizational literature. Many influential job design models, for instance the Job Characteristics model (Hackman & Oldham, 1976), the Job Demand-Control model (Karasek & Theorell, 1990), and the Job Demands-Resources model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) all include concepts referring to some form of control.

Control in these theories is seen from an organizational perspective and is usually defined as the amount of autonomy a person is given, how much decision latitude the job offers, or to what extent a person is allowed to set own targets and goals. These theories therefore describe the opportunities for control or the demands for control resulting from the environment of the employee. The theories do not extensively focus on control from within the employee, that is, how much control a person is capable of by means of personality or resource. An exception is the work of Schmidt, Neubach, and Heuer (2007) which focused on self-control demands (i.e., control demands from the environment), showing that increased self-control demands at work are positively related to dimensions of burnout, namely emotional exhaustion and depersonalization. These authors, however, also showed that the effect of self-control demands on burnout was weaker when cognitive control (i.e., control from within the employee) was high. This implies that having high abilities for control, in employees, may eventually outweigh the control demands imposed by the environment. This can be explained using the Job Demands-Resources model which states that the possible harmful effect of a job demand can be significantly reduced with the support of a relevant job resource (Bakker & Demerouti, 2007). Given the importance of opportunities for control in jobs, it is likely that control capabilities of employees in the form of trait self-control, is an important construct for work-related processes as well.

One area in which employees potentially benefit from self-control is contextual performance. Contextual performance in general supports the broader organizational, social and psychological environment, not the organization's technical core (Motowidlo & Van Scotter, 1994). However, it is an important factor for organizational success. Although self-control is likely very useful for task-related behaviors as well, many work tasks are clearly defined, behaviors directly rewarded, and the goals proximal, giving fewer opportunities for self-control. That is, task behaviors are to a larger extent controlled externally (e.g., by rules and supervisors) and thus less suited as a starting point for research on self-control and performance. Contextual performance, however, is more discretionary (Motowidlo & Van Scotter) and therefore presumably relies more heavily on self-control. The current research is therefore aimed at possible merits of self-control in contextual performances.

A recent study (De Boer, Van Hooft, & Bakker, 2011) distinguished between two types of self-control: stop control and start control. Stop control is self-control aimed at short-term attractive but long-term undesirable behavior, and refers to the ability not to perform this behavior. Start control is self-control aimed at short-term unattractive but long-term desirable behavior, and refers to the ability to perform this behavior. This distinction was tested among university students using different behavioral outcomes. Stop control, but not start control, was negatively related to drinking alcohol (i.e., for relatively many students a short-term attractive but long-term non-beneficial behavior);

whereas start control, but not stop control, was positively related to studying (i.e., for many students at times a short-term unattractive but long-term beneficial behavior). The measure used for the distinction demonstrated substantial correlations with the general self-control scale of Tangney, Baumeister and Boone (1994) and adequate reliabilities for both scales (De Boer et al., 2011). The validity and usefulness of this measure however has not yet been tested using a working sample. The distinction that is represented in the scales largely fits with a model of emotional and behavioral regulation (Pulkkinen, 1995) which differentiates between inhibition and expression as passive and active forms of self-control on which individuals can both score high or low independently. Pulkkinen, Ohraanen, and Tolvanen (1999) used this model to successfully predict career orientation over time demonstrating that self-control as a personality factor can be relevant in the organizational domain.

The current paper focuses on the contribution of self-control as a separate construct, with a distinction between to types of self-control, to the organizational field. Theoretically, discerning different factors within self-control can lead to a better understanding of the processes involved in job behavior, similar to the added insight of distinguishing self-control from other lower-order factors within conscientiousness (Roberts et al., 2005). Also, knowledge of self-control could possibly expand the job design models (Bakker & Demerouti, 2007; Hackman & Oldham, 1976; Karasek & Theorell, 1990) to incorporate control capabilities as well as control opportunities and demands. Practically, the knowledge could be used for personnel selection or as a basis for assigning tasks.

Stop and start control are proposed to differentially relate to different types of behavior at the workplace. Some behaviors that are habitual or highly attractive are not beneficial in the long run. Examples are internet-surfing, gossiping, taking an extra coffee break, and making personal phone calls. These behaviors are not in line with the goal of, for instance, finishing a work project in time. In instances that employees feel the urge to engage in such non-beneficial behavior, self-control is needed to refrain from these behaviors. More specifically, we propose that to stop highly probable behavior that interferes with a work-related goal, employees require stop control. This does not mean that without consciously controlling themselves, all employees would surf on the internet or gossip, but that those who have the urge to, are better able to stop these behaviors if they have a high stop control.

Also, many activities that are beneficial to the organization may not be performed because they are time-consuming, boring, unpleasant, or difficult. In order to perform these unattractive behaviors we propose that employees require start control. Although it may vary across employees and situations whether a task is perceived as aversive, examples of beneficial but potentially

aversive tasks may include attending voluntary functions, giving personal negative feedback, and replying promptly to e-mails.

It is important to note that not all behaviors require self-control to stop or start and that different behaviors may require control for different people. For instance, some employees may have difficulty replying emails in a timely manner but others do not. Nevertheless, we propose that in general stop control is required for behavior that should not be performed but without self-control would be, and start control is required for behavior that should be performed but without self-control would not be.

The distinction between stop control and start control, although theoretically applicable in a work setting has not been empirically tested in such contexts. The current studies focus on self-control as a trait-like quality and investigate the relation between stop and start control and contextual performance. Contextual performance is a multidimensional construct and we have chosen to focus on three indicators: organizational citizenship behavior (OCB; Smith, Organ, & Near, 1983), personal initiative (Frese, Fay, Hilburger, Leng, & Tag, 1997), and proactive coping (Greenglass, 2001). The main purpose of the current research is to demonstrate the usefulness of studying stop and start control in the workplace by testing the proposition that stop control and start control are differentially related to OCB, personal initiative and proactive coping.

Study hypotheses

OCB can be described as individual contributions in the workplace that go beyond role requirements and contractually rewarded job achievements that are beneficial to the organization (Organ & Ryan, 1995). Smith et al. (1983) noted that OCB refers to behaviors such as altruism and general compliance. Altruism includes those behaviors that are aimed at helping a co-worker or a boss, whereas general compliance is not aimed at anyone in specific but is more indirectly helpful and can be described as 'being a good employee'. It includes behaviors such as attending voluntary meetings. Whether it is still true that all the behaviors that once belonged to OCB remain entirely voluntary or unrewarded nowadays is debatable (see Organ, 1997) but the behaviors can be considered contextual performance, which is the topic of this paper. We must also note that the terms 'organizational citizenship behavior' and 'contextual performance' are sometimes used interchangeable; in this paper OCB refers to specific behaviors and is part of the larger-order construct of contextual performance, as are personal initiative and proactive coping.

In relation to OCB, we propose that especially start control is of importance. In order to help others with their workload, orient new employees or volunteering for extra activities, one has to engage in activities that may not always be immediately desirable or gratifying but are beneficial in the long run. Overcoming resistance to do something requires start control. We therefore

hypothesize that only start control, not stop control positively predicts OCB (Hypothesis 1).

Personal initiative is behavior characterized by five aspects: (1) consistent with the organizational mission; (2) long term focus; (3) goal directed and action oriented; (4) persistent in the face of barriers and setbacks; and (5) self-starting and proactive (Frese, Kring, Soose, & Zempel, 1996). Together these aspects make up what Frese et al. (1997) call a behavior syndrome, which results in a person taking an active and self-starting approach to work. Research has shown that personal initiative is positively related to overall performance ratings (Bledow & Frese, 2009). Also, personal initiative was found to be part of a positive gain spiral; it has been shown to be positively related over time to work-unit innovativeness and work engagement (Hakanen, Perhoniemi, & Toppinen-Tanner, 2008).

The first and second aspects of personal initiative show that it takes place in the contextual performance domain. Initiative that is consistent with the organizational mission and has a long term focus will support the broader organizational environment. It is the third aspect; goal directed and action oriented, that links personal initiative to self-control. Self-control is involved when actions taken towards a goal are hindered. When self-control is successful, it generates behavior that leads to the attainment of self-set goals. Self-control is important for overcoming psychological barriers and setbacks, which can be seen as part of the fourth aspect. Since personal initiative is characterized by self-starting, rather than self-stopping behavior, we propose that only start control is required. We hypothesize that only start control, not stop control positively predicts personal initiative (Hypothesis 2).

Proactive coping is a strategy that differs from traditional coping; it is not reactive but proactive and it manages goals, not risks (Schwarzer, 2000). Instead of dealing with stress when goals are lost or threatened, resources can be mobilized beforehand, so as to promote positive moods and mental states before stress occurs. Literature shows that different coping strategies can be indirectly related to job satisfaction or withdrawal intentions (e.g., Boyd, Lewin, & Sager, 2009) - important factors for both the individual and the organization. Coping with a positive orientation reduces emotional exhaustion much better when compared to working harder or avoidance (Ito & Brotheridge, 2003). Greenglass and Fiksenbaum (2009) showed that proactive coping and organizational support together increase positive affect, which in turn reduces absenteeism.

Proactive coping behavior entails perceived control over the environment and acting based on foreseen stressful events. Acting on an event that has not occurred yet, requires behavior that is not impulsive or habitual. We hypothesize that only start control, not stop control positively predicts proactive coping (Hypothesis 3).

Stop and start control have not been previously researched as unique constructs in a work-related context. We therefore found it necessary to start with a pilot study, to test whether the constructs as such were applicable to a working sample. In this pilot study, we first tested the validity of a recently developed self-control measure in a working sample, in order to be able to test our hypotheses. Second, since self-control is theoretically related to conscientiousness, we wanted to find out whether this relation was not too strong to use self-control as a separate construct. We will now address these issues by giving a summary of the pilot study before turning to Study 1 and 2.

Pilot

The goal of this pilot study was to examine whether the scales for stop and start control, developed by De Boer et al. (2011) are suited for employees and whether the constructs are empirically different from each other as well as from conscientiousness. Validity was assessed based on factor loadings of the items using confirmatory factor analysis, which also determined whether the two scales for stop and start control are distinct. Correlations of these scales with a scale for conscientiousness as well as another confirmatory factor analysis determined whether these constructs are distinct.

An on-line questionnaire was linked to a website with content concerning work and work performance. On the homepage of this website visitors were told about the questionnaire that offered feedback on their responses after participation. A total of 231 respondents (68.4% women, mean age = 41.04, $SD = 10.44$) completed the questionnaire. It was a heterogeneous sample of employees from The Netherlands with educational backgrounds ranging from vocational education (4%) to university (24%), with the largest group having finished college (37%). Respondents were mostly employed in healthcare (19%), but backgrounds varied from communication (8%) to education (11%), and industry (8%). Most of the respondents were employed by a company of between 100 and 1000 employees (36%) and 56.7% was employed fulltime (≥ 35 hours per week). Of the respondents, 28% had a managerial position.

Participants filled out a self-control measure (De Boer et al., 2011) which consists of two scales: stop control (nine items) and start control (eight items). Sample items include: “I can easily stop doing something fun that I know to be bad for me” (stop control), “I do things spontaneously as soon as I think of them” (stop control, reverse scored), “Even if I don’t feel like it, I’m able to complete the tasks that needed to be done” (start control), and “I find it difficult having to restart something after I thought I was already done” (start control, reverse scored). Cronbach’s alpha’s were satisfactory for stop control (.73) and start control (.75).

Conscientiousness was measured using twelve items from the Neo-PI-R (Hoekstra, Ormel, & De Fruyt, 1996). A sample item is: “When I make a promise, people can count on it that I will keep that promise.” Cronbach’s

alpha was .83. All items are scored on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*).

First, the self-control items were subjected to a confirmatory factor analysis using AMOS 16.0 (Arbuckle, 2006) with a maximum likelihood procedure. Results showed that all items had significant factor loadings ($p < .01$), except one (see Table 1). Stop control item 4 (“I stick to the rules even if I find them unreasonable”) did not load onto either stop or start control and seemed not to be a good item for this sample. It was therefore decided to remove this item from the scale. Further testing with two eight-item scales, represented in a model with two latent variables, resulted in a reasonable fit to the data (χ^2 (103, $N = 231$) = 310.70, $p < .01$, GFI = .85, SRMR = .08). This two-factor model also fit the data significantly better than loading all items on a single latent variable (χ^2 (104, $N = 231$) = 572.73, $p < .01$, GFI = .74, SRMR = .11, $\Delta\chi^2$ (1, $N = 231$) = 262.03, $p < .01$).

The aim of this procedure was to assess whether the two-factor model fit better to the data than a one-factor model, which supports the distinction between stop and start control. However, the fit of the models could be improved by letting the errors of various items within one scale (stop or start control) relate to each other. This procedure was also used by De Boer et al. (2011) who reported a total of 9 correlated errors. We chose the same procedure and the same errors, based on the (reverse) coding of the items. Adding these covariances resulted in an acceptable fit for the two-factor model, χ^2 (94, $N = 231$) = 151.38, $p < .01$, GFI = .93, SRMR = .06, with the model still displaying the proposed distinction. Adding the same covariances did not result in acceptable fit for the one-factor model, (χ^2 (95, $N = 231$) = 268.28, $p < .01$, GFI = .86, SRMR = .09).

Both stop control ($r = .35$, $p < .01$) and start control ($r = .51$, $p < .01$) were significantly positively correlated with conscientiousness. Confirmatory factor analyses, however, showed that loading the stop control items on one latent variable, the start control items on another latent variable and all conscientiousness items on a third latent variable (χ^2 (347, $N = 231$) = 948.34, $p < .01$, GFI = .70, SRMR = .10) fit significantly better to the data ($\Delta\chi^2$ (3, $N = 231$) = 329.62, $p < .01$) than loading all items on a single latent variable (χ^2 (350, $N = 231$) = 1277.96, $p < .01$, GFI = .67, SRMR = .11), supporting the divergent validity of the self-control scales.

The results from the first factor analyses show that the stop and start control scales, with the exception of one item, are valid, represent separate constructs, and can be used in a work-related context. The better fit of the two factor model, the factor loadings of the items, and the Cronbach’s alphas for stop and start control are highly similar to the findings of De Boer et al. (2011). Also, the correlations between self-control and conscientiousness and factor analyses of the items, show that the constructs are related, but that self-control is distinct from conscientiousness. This is in line with the theory (Roberts et al., 2005,

Tangney et al., 2004). We concluded that the stop and start control scales could be used in a work-related context and proceeded with Study 1 in order to test Hypotheses 1 to 3.

Table 1

Factor loadings from a two-factor structure for the stop and start control scales, Pilot study.

	Stop control	Start control
1. During shopping I make impulsive purchases.*	.56	
2. I can easily stop doing something fun that I know to be bad for me.	.23	
3. I do things spontaneously as soon as I think of them.*	.43	
4. I stick to the rules even if I find them unreasonable.	.02	
5. When it comes to spending money, I find it difficult to control myself.*	.77	
6. I never take action without thinking about it first.	.48	
7. I find it easy to save money.	.70	
8. Before I do something I go over the possible consequences.	.55	
9. I find it fun to break rules and do things that I shouldn't.*	.30	
10. I persevere at important tasks, even if I'm afraid something might go wrong.		.39
11. I find it difficult to do tasks that I hate doing.*		.45
12. I find it difficult having to restart something after I thought I was already done.*		.35
13. I'm still able to concentrate when things around me are very hectic.		.70
14. Even if I don't feel like it, I'm able to complete the tasks that needed to be done.		.48
15. When there is much distraction, I'm able to focus on one thing in order to get it done.		.88
16. When my mind wanders while I'm reading, it's easy for me to concentrate on the text again.		.59
17. I'm able to continue working even when severely tired, if something really needs to be done.		.36

* Reverse coded. N = 231.

Study 1

Participants and procedure

A total of 296 new respondents from all areas of The Netherlands (66.2% women, mean age = 44.50, $SD = 9.84$) filled out an on-line questionnaire which was linked to the same website as in the pilot study. Educational backgrounds in this sample again ranged from vocational education (23%) to university (15%), with the largest group having finished college (40%). Respondents were

mostly employed in healthcare (25%), arts, amusement and recreation (15%), education (14%), and industry (6%). Most of the respondents were employed by a company of between 100 and 1000 employees (31%) and 64.8% was employed fulltime. Of the respondents, 28% had a managerial position.

Measures

Self-control was measured in the same way as in the pilot study. Eight items were used for stop control and eight items for start control. All items were scored on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Cronbach's alpha was .70 for stop control and .75 for start control.

OCB was measured using nine items from the Smith et al. (1983) measure for Organizational Citizenship Behavior as suggested by Kelloway, Loughlin, Barling, and Nault (2002). In their study, this shortened version of the scale displayed a Cronbach's alpha of .74. Items include: "My attendance at work is above the norm", and "I help others with their work when they have a high workload". Items were scored on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Cronbach's alpha in this study was .76.

Personal initiative was measured using the self-reported initiative questionnaire of Frese et al. (1997). This questionnaire consists of seven items, including: "I take initiative immediately even when others don't", and "I am particularly good at realizing ideas." Items were scored on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Cronbach's alpha was .86.

Proactive coping was measured using the proactive coping subscale of the proactive coping inventory (Greenglass et al., 1999). This scale consists of 14 items, including: "I turn obstacles into positive experiences", and "I try to let things work out on their own"(reverse scored). Items were scored on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Cronbach's alpha was .85.

Results

Means, *SDs*, alphas, and correlations for all variables are displayed in Table 2. Start control displayed a moderate to strong significant positive correlation with OCB ($r = .40, p < .01$), but stop control was also significantly but weakly related to OCB ($r = .13, p < .05$). Start control displayed a significant positive and strong correlation with personal initiative ($r = .50, p < .01$) and stop control was not significantly related to personal initiative ($r = .03, ns$). Start control displayed a significant positive and strong correlation with proactive coping ($r = .52, p < .01$), but stop control was also significantly but weakly related to proactive coping ($r = .12, p < .05$).

Three different regression analyses were performed (see Table 3) to formally test Hypotheses 1, 2, and 3, stating that only start control positively predicts OCB, personal initiative, and proactive coping, respectively. Stop and start control together explained a significant portion of the variance in OCB, personal initiative, and proactive coping. Beta-weights, however, show that

start control explains unique variance in OCB ($\beta = .39, p < .01$), personal initiative ($\beta = .51, p < .01$), and proactive coping ($\beta = .52, p < .01$), whereas stop control does not. All beta-weights were significantly different between stop and start control, $t(295) = 4.47, p < .01, t(295) = 7.27, p < .01, t(295) = 7.07, p < .01$. These results support Hypotheses 1, 2, and 3.

Table 2

Correlations for all variables in Study 1

Scale	<i>M</i>	<i>SD</i>	α	1	2	3	4	5
1. Stop control	4.50	0.83	.70	-				
2. Start control	4.66	0.84	.75	.17**	-			
3. OCB	3.75	0.50	.76	.13*	.40**	-		
4. Personal initiative	3.66	0.62	.86	.03	.50**	.61**	-	
5. Proactive coping	3.62	0.52	.85	.12*	.52**	.55**	.72**	-

Note. OCB = Organizational Citizenship Behavior. $N = 296$.

** $p < .01$. * $p < .05$.

Table 3

Regression analysis of OCB, personal initiative, and proactive coping on stop control and start control in Study 1

Variable	OCB		Personal initiative			Proactive coping			
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>
Stop control	0.04	0.03	.07	-0.04	0.04	-.05	0.02	0.03	.03
Start control	0.23	0.03	.39**	0.37	0.04	.51**	0.32	0.03	.52**
<i>R</i>	.40		.50			.52			
Adjusted R^2	.16		.25			.27			
$F(df_1, df_2)$	28.60 (2, 293)**		49.86 (2, 293)**			55.11(2, 293)**			

Note. OCB = Organizational Citizenship Behavior. $N = 296$.

** $p < .01$. * $p < .05$.

Discussion

Overall these results show that self-control is positively related to contextual performance. As theorized, the amount of control an employee is capable of is relevant for work-related outcomes. This shows that it is not only important how much autonomy a person receives in his work but also how much self-control a person is capable of.

Start control proved to relate positively to OCB, personal initiative, and proactive coping. Stop control was positively correlated to OCB and proactive coping but did not explain unique variance in these variables. Although these results are as expected, they only show the usefulness of start control for organizational outcomes and do not adequately show the possible usefulness of stop control. We therefore decided to conduct a second study.

Study 2

In order to also measure behavior that is undesirable and therefore may require stop control to refrain from, counterproductive work behavior (CWB) was added to the variables in Study 2. CWB involves deliberate actions to violate organizational policies and rules that harm the organization and its members (Robinson & Bennett, 1995). Examples are aggression, stealing, and gossiping. Kelloway et al. (2002) have shown OCB and CWB to be separate constructs, however they are negatively related. Previous research has also shown that measures for general self-control are negatively related to workplace aggression (Douglas & Martinko, 2001), general counterproductive behavior (Marcus & Schuler, 2004), and white-collar crime (Blickle, Schlegel, Fassbender, & Klein, 2006) and can be used to distinguish between employees that have been involved in situations requiring formal disciplinary or departmental actions and employees that have not exhibited any job dysfunctions (Sarchione, Cuttler, Munchinsky, & Nelson-Gay, 1998).

This second study is performed in order to test if, in addition to start control, stop control is also a useful predictor in the organizational domain, and to show that both types of self-control are different. Study 2 therefore aims to extend Study 1, with the addition of CWB to the outcome variables. CWB covers behaviors that violate policies and harm the organization and therefore represent behavior that is undesirable. Inhibiting undesirable behavior requires stop control. We hypothesize that only stop control, not start control negatively predicts CWB (Hypothesis 4).

Participants, procedure, and measures

All 296 employees from a local office of an international risk assessment and insurance company in The Netherlands were invited to fill out an on-line survey. A total of 202 (68%) participants completed the entire survey (40.6% women, mean age = 43.9, $SD = 9.9$). Participants had worked for the company for 11.9 years ($SD = 11.4$) on average, and 84.6% was employed fulltime.

The same measures for stop control, start control, OCB, proactive coping, and personal initiative were used as in Study 1. The measure for CWB existed of 10 items, based on a list of deviant work behaviors (Robinson & Bennett, 1995), as suggested by Kelloway et al. (2002). In their study, this shortened version of the scale display a Cronbach's alpha of .72. Items included: "I cover up my mistakes", "I gossip about coworkers", and "I intentionally work slow".

Items were scored on a 7-point scale (1 = *never*, 7 = *always*). Cronbach's alpha in this study was .69.

Results

Means, *SDs*, alphas, and correlations for all variables are displayed in Table 4. Start control displayed a significant positive correlation with OCB ($r = .16, p < .05$) and stop control did not ($r = -.02, ns$). Start control displayed a significant positive correlation with personal initiative ($r = .36, p < .01$) and stop control did not ($r = .12, ns$). Start control displayed a significant positive correlation with proactive coping ($r = .51, p < .01$), but stop control was also significantly positively related to proactive coping ($r = .18, p < .05$). Stop control displayed a significant negative correlation with CWB ($r = -.20, p < .01$), but start control also displayed a significant negative correlation with CWB ($r = -.26, p < .01$).

Four different regression analyses were performed (see Table 5) to formally test Hypotheses 1, 2, 3, and 4. Stop and start control together explained a significant portion of the variance in OCB, personal initiative, proactive coping, and CWB. Beta-weights show that stop control explains unique variance in CWB ($\beta = -.14, p < .05$), but not in OCB ($\beta = -.07, ns$), personal initiative ($\beta = .01, ns$) or proactive coping ($\beta = .04, ns$); whereas start control explains unique variance in all dependent variables, $\beta = -.22, p < .01, \beta = .18, p < .01, \beta = .36, p < .01, \beta = .50, p < .01$. Except for CWB, $t(201) = 0.08, ns$, beta weights were significantly different between stop and start control, $t(201) = 2.10, p < .05, t(201) = 3.15, p < .01, t(201) = 4.20, p < .01$. These results support Hypothesis 1, 2, and 3, but not Hypothesis 4.

Table 4

Correlations for all variables in Study 2

Scale	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6
1. Stop control	4.61	0.63	.66	-					
2. Start control	4.62	0.58	.70	.28**	-				
3. OCB	4.62	0.61	.60	-.02	.16*	-			
4. Personal initiative	5.17	0.65	.86	.12	.36**	.33**	-		
5. Proactive coping	4.96	0.60	.88	.18*	.51**	.32**	.73**	-	
6. CWB	1.57	0.41	.69	-.20**	-.26**	-.11	-.13	-.17*	-

Note. OCB = Organizational Citizenship Behavior. CWB = Counterproductive Work Behavior.

N = 202.

** $p < .01$. * $p < .05$.

Table 5

Regression of OCB, personal initiative, proactive coping, and CWB on stop control and start control in Study 2

Variable	OCB		Personal initiative			Proactive coping			CWB			
	B	SE B	B	B	SE B	B	B	SE B	β	B	SE B	B
Stop control	-0.07	0.07	-.07	0.01	0.07	.01	0.03	0.06	.04	-0.10	0.05	-.14*
Start control	0.19	0.08	.18**	0.40	0.08	.36**	0.50	0.07	.50**	-0.15	0.05	-.22*
R		.18			.36			.51			.29	
Adjusted R ²		.02			.12			.25			.08	
F (df ₁ , df ₂)		3.13 (2, 199)*			14.96 (2, 199)**			34.22 (2, 199)**			9.22 (2, 199)**	

Note. OCB = Organizational Citizenship Behavior. CWB = Counterproductive Work Behavior.

N = 202.

** $p < .01$. * $p < .05$.

Discussion

The findings of Study 2 largely replicate those of Study 1 and adequately show that self-control is related to contextual performance. Stop control is negatively related to CWB and start control is positively related to OCB, personal initiative, and proactive coping, and negatively to CWB. When measuring a construct like CWB, impression management of the participant is always a concern. Because all measures were self-report in this research, mono-method bias could be a problem. However, the differential findings for stop and start control are likely unaffected by this effect since both were measured in the same way. The direct relations of stop control on CWB or start control on CWB however should be interpreted with some caution.

The negative relation between start control and CWB was unexpected. This finding can be explained by the fact that some items in the CWB measure represent behaviors that have more productive yet more difficult behavioral alternatives, where start control could be useful. For instance, instead of covering up a mistake or blaming a coworker, one could come forward about the mistake in a more effortful manner. Similarly, employees would also score low on CWB if they worked harder instead of intentionally slow. Another possible explanation is that the CWB measure that was used incorporated items from the 'withdrawal' dimension of CWB (see Spector et al., 2006). This dimension contrasts the other dimensions of CWB 'abuse against others', 'production deviance and sabotage', and 'theft', in that it does not do direct harm and does not include specific behavior. Start control can be negatively related to withdrawal, since it activates behavior. Stop control seems to be more important for the other domains, preventing long-term undesirable behavior. Future research should incorporate the different dimensions of CWB

in order to test this claim and improve on the findings. Future research could also focus on different forms of OCB, which Spector and Fox (2010) have shown to relate to anger, which can subsequently lead to CWB. It would be interesting to study the role of self-control for determining the turning point where anger turns into CWB.

General discussion

The goal of the current paper was to show that self-control is relevant to work performance. We have chosen contextual performance as a starting point for this investigation and used a new distinction within self-control, between stop control and start control, to demonstrate the relations between self-control and contextual work performance. Overall the results indicate the relevance of trait self-control to contextual performance in the workplace.

First, the results of the pilot study, Study 1 and Study 2 showed support for the validity of the distinction within self-control in a work-related context. However, the scales used for the measurement of stop control and start control could be further optimized for use in this context. For instance the different domains that are covered in the items could be adjusted to better fit an organizational context, which may also result in better fit of the two-factor structure.

Second, the results of Study 1 and 2 showed that self-control indeed relates to contextual performance; start control was mainly positively related to positive behavior and stop control and start control were both negatively related to negative behavior. For OCB, personal initiative, and proactive coping the findings are in line with the theory. To perform OCB one has to engage in activities that are not always immediately attractive but beneficial in the long run. The extra activities require some extra effort and start control helps overcome this. Personal initiative is characterized by self-starting and persistence in the face of barriers (Frese et al., 1996). For this behavior, start control is an essential requirement. The main difference of proactive coping with other coping behavior is its anticipatory nature and the fact that a person does something in order to cope, instead of waiting or doing nothing. This active position fits well with the finding that only start control is related to proactive coping.

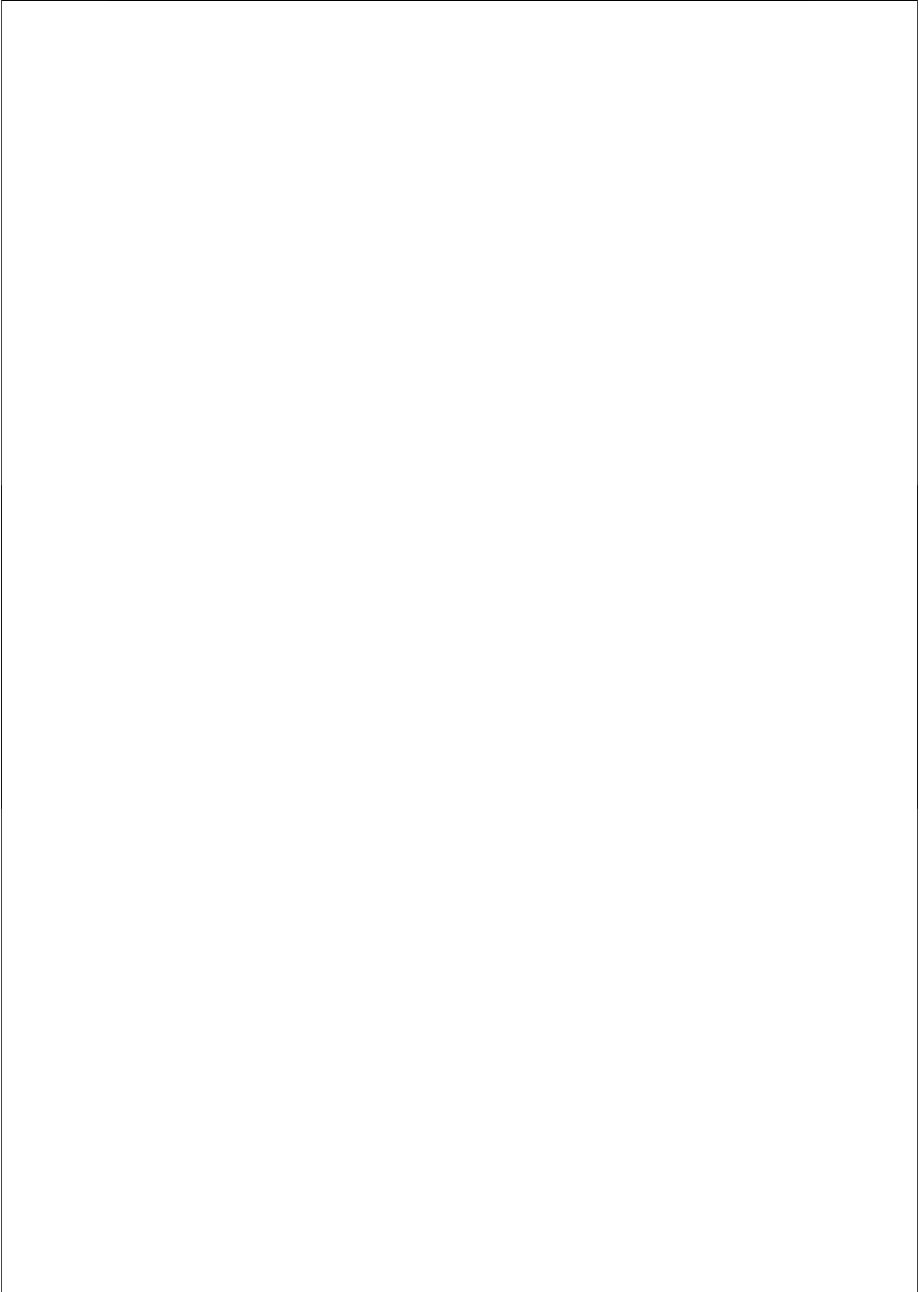
This is a first step towards determining the role of trait self-control in overall work performance. It would be of great interest to future research to expand the scope to include the relations of stop and start control to individual task performance as well as other work related outcomes. Another possibility is to investigate the relative difficulty that employees encounter with specific tasks that they should perform or refrain from. Take for example the new emerging social media that employees can access from work; how much problems do employees actually encounter when trying not to let this disturb their work performances?

Since control has an important part in the Job Characteristics model (Hackman & Oldham, 1976), the Job Demand-Control model (Karasek & Theorell, 1990), and the Job Demands-Resources model (Bakker & Demerouti, 2007; Demerouti et al., 2001) it is interesting to discuss the findings of this research in relation to those models. It is well known that giving employees more decision latitude, allowing them to set their own standards or generally control their own activities and actions has a positive influence on both their well being and their performance. We can now add to this the finding that this is not only the case for control given to them but also for the amount of control that they themselves possess. An employee who is more in control of his actions will therefore display more contextual performance.

By combining theory from job models (e.g., Bakker & Demerouti, 2007) and self-control it might be that there is a moderating role for trait self-control in job processes. For instance when employees have high self-control, they likely benefit more from the control, or autonomy, that they are given. This would be because they are better able to deal with the room for control and subsequent responsibilities. Conversely, giving autonomy to a person with low self-control might eventually lead to burnout (see for example, Schmidt et al., 2007) or poor decisions. An example of this in the task-performance domain would be that giving decision latitude to a person who is not capable of setting and keeping own standards for tasks, can actually diminish task performance.

Some limitations need to be mentioned to accompany the findings. The studies were correlational in nature and only self-report measures were used in this research. This does not allow for any firm conclusions of causal relations. Also, some items covered delicate areas such as work attendance and theft. Although every effort was made to ensure participants that all responses were anonymous and would be dealt with confidentially, it might be that some participants adjusted their answers to create a more favorable impression. Lastly, common method variance is a possible issue. This does not however threaten the distinction between stop and start control as both scales were measured using the same method but the relations with other constructs were still different. Nevertheless, future research could benefit from the use of different research designs, for instance a longitudinal design, with less subjective measures, such as other reports and objective measures of for example CWB (e.g., absenteeism).

This study shows that self-control as a separate construct is of importance for the industrial and organizational field. The amount of control employees are capable of is related to their contextual performance. And these effects are different for stop and start control. We can only speculate on the importance of self-control for task performance but for work that nowadays takes place in a highly dynamic environment, where skills like flexibility and adaptability are more important than ever (Cascio, 2003), self-control will most probably only become more useful to the employee.



Chapter 5

Stop and start control among youths in juvenile institutions¹⁰

¹⁰ This chapter is submitted for publication as: De Boer, B. J., Van Hooft, E. A. J., & Bakker, A. B. (2011). *Stop and start control among youths in juvenile institutions*. Manuscript submitted for publication.

Abstract

This research examined effects of core self-evaluation on stop and start control over time and of stop and start control on objective performance among youths in juvenile institutions ($N = 231$). Results show that new measures for stop and start control can be used in this population, represent distinct forms of self-control based on factor loadings, show adequate test-retest correlations and have differential effects on outcome variables. Core self-evaluation was positively related to start control, but not to stop control, measured three months later. Start control, but not stop control, positively predicted youths' performance in the institution, as rated by the youth counselors three months later.

Introduction

A small group of youths, from early teens to early adolescents, in nearly every society, display behaviors which causes harm both to the people involved and the society at large. These behaviors include aggressive behaviors, drug abuse, and vandalism. These anti-social and problem behaviors are predictive of delinquency and criminal activity later in life (e.g., Renschmidt & Walter, 2010). However, troubled youths can be treated at an early stage in order to reduce criminal propensity and to increase the chances for these youths to become a meaningful part of society (Loeber, 1990). Most countries therefore have juvenile institutions that help troubled youths with specially designed programs to get them back on the right track. The effectiveness and usefulness of many such programs is still under investigation (e.g., Mulvey, Arthur, & Reppucci, 1993; Schaeffer & Borduin, 2005), however the consensus is that without treatment the problem behavior of these youths will escalate and turn into criminal activity which may last far into adulthood (Moffitt, 1993). Continuous effort is put into developing better programs that repress anti-social and problem behavior and give these youths a chance to get schooling and find meaningful jobs.

In order reduce anti-social and problem behaviors; it is important to understand what causes these behaviors. One theory in the field of criminology that has gained enormous attention is that of Gottfredson and Hirschi (1990). This theory states that all anti-social or problematic behaviors, whether these are criminal or not, share the same characteristic; such behaviors are rewarding in the short term but have negative long-term outcomes. The people who engage in such behaviors fail to consider these long-term consequences of their acts. Gottfredson and Hirschi characterized these individuals as having low self-control and posited self-control as an important factor in explaining anti-social and problem behaviors, including criminal acts. Self-control has been described as changing automatic responses in a conscious manner (Baumeister & Vohs, 2004) which will indeed benefit long-term outcomes by sacrificing short-term outcomes. Research has shown that high levels of self-control decrease aggressive and delinquent behavior (Cherek, Moeller, Dougherty, & Roades, 1997; De Kemp, et al., 2009; Madden, Petry, Badger, & Bickel, 1997; Wulfert, Block, Santa Ana, Rodriguez, & Colman, 2002). Conversely, low levels of self-control are seen as predictive for criminality in youths (Delisi & Vaughn, 2008).

The present research focuses on self-control as an important factor in predicting anti-social and problem behavior. In addition, the present research focuses on self-control as predictor of positive and constructive behavior among troubled youths. Furthermore, we investigated whether the capacity to control behavior can increase over time among youths who reside in juvenile institutions. It is of great interest to find out whether self-control can be increased, which in effect could lower anti-social and problem behavior in

troubled youths. If so, training programs can be devised that increase the level of self-control of its participants. These programs could be useful as an addition to the current programs in juvenile institutions.

Self-control will be investigated using a recently made distinction within self-control; stop and start control. Previously this distinction within self-control was shown to be empirically valid as stop and start control were related differently to different types of behavior (De Boer, Van Hooft, & Bakker, 2011). The present research is the first to test its relevance and usefulness on a sample of youths. If the distinction between stop and start control is valid and stop and start control show differential relations to performance of problem youths, this knowledge can be used in developing programs for juvenile institutions. Since these programs will be concerned with increasing self-control, it is important to know what factors relate to a potential increase in self-control capacity. Based on the findings that positive affect can temporarily increase self-control capacity (Tice, Baumeister, Shmueli, & Muraven, 2007), we looked for a construct that is closely related to positive affect, but is more stable over time such that its influence would extend over a period of time. Based on this reasoning, we propose that core self-evaluation (CSE; Judge, Locke, & Durham, 1997; Judge, Erez, Bono, & Thoresen, 2003) is an important predictor of self-control.

First we will discuss the distinction between stop and start control and introduce core self-evaluation as a potential predictor of self-control, before turning to a model in which different longitudinal effects of self-evaluations and self-control are hypothesized. Then this model is tested on a sample of youths in a juvenile institution and we discuss the findings. The main purpose of the present paper is threefold: 1) examining whether the new constructs stop and start control can be used among troubled youths and discerned as separate forms of self-control, 2) testing whether core self-evaluation is related to stop and start control over time, and 3) examining whether stop and start control predict objective measures of performance of youths.

Self-control

Research has shown that people systematically differ in their ability for self-control. Consequently, many studies have operationalized self-control as a lower-order trait that has some stability over time (e.g., Brandon, Oescher, & Loftin, 1990; Tangney, Baumeister, & Boone, 2004). However, self-control levels are influenced by situational variables as well and may temporarily vary depending on factors such as previous self-control efforts (Muraven & Baumeister, 2000), distress (Tice, Bratslavsky, & Baumeister, 2001), emotions (Baumeister, Zell, & Tice, 2007), and affect (Tice, et al., 2007). These findings are supportive of the muscle metaphor that has been used to describe self-control ability (Baumeister, Heatherton, & Tice, 1994): exercising self-control requires energy and after a period of using this energy, it becomes depleted and

further self-control efforts will likely fail. This metaphor was extended by Muraven, Baumeister, and Tice (1999), showing that, like a muscle, self-control capacity, or strength, can be increased through exercise (see also Baumeister, Gailliot, DeWall, & Oaten, 2006). It has been shown that self-control capacity can be temporarily increased, for instance through positive affect (Tice et al., 2007). Any intervention aimed at increasing self-control would therefore benefit from a focus on self-control exercise and positive affect, over an extended period of time. Since many interventions currently employed in juvenile institutions already focus on making the youths feel good about themselves, the present research looked for subsequent increase in self-control while measuring how the youths viewed themselves. We expected that a positive view of the self would increase self-control capacity over time in the same way that positive affect influences self-control temporarily.

Self-control can be divided into two forms: stop control and start control (De Boer et al., 2011). Stop control is defined as self-control aimed at short-term attractive but long-term undesirable or harmful behavior, in order not to perform this behavior. Start control is self-control aimed at short-term unattractive but long-term desirable or beneficial behavior, in order to perform this behavior. These definitions of stop and start control include attractiveness and desirability which both stem from different systems. Metcalfe and Mischel (1999) describe a 2-system framework consisting of a hot, emotional 'go' system and a cool, cognitive 'know' system. The hot system is reflexive, fast and under stimulus control. Were people to act solely based on this system, they would perform all attractive behaviors and never the unattractive ones. The cool system is reflective, slow and under self-control. This system makes people find certain behaviors desirable and others undesirable. Unfortunately, not all behaviors that one could find attractive behaviors are also desirable or beneficial to them, for instance smoking. Likewise, not all unattractive behaviors are equally undesirable. On many occasions, we need self control to refrain from the short-term attractive but long-term harmful behaviors or to perform the short-term unattractive but long-term beneficial ones.

In relation to stop control, the processes of these systems will progress as follows. First the behavior that is the target of self-control is determined by the reflexive system. For example, if a person experiences an impulse for certain behavior, then this behavior is attractive. Second, this person also holds some self-set goals, explicit or implicit, determined by the reflective system, the constraint. Third, if the behavior is in line with these goals then the behavior is desirable; however if the attractive behavior is undesirable, stop control is needed to avoid it. Examples of successful stop control are not smoking when trying to quit smoking and not eating fast food when trying to lose weight.

These systems operate similarly for start control. If a person sets goals for certain behavior, using the reflective system, this behavior becomes desirable. If, however, this behavior is unattractive as determined by the reflexive system

(difficult, boring, fatiguing, scary, etc.), start control is needed to perform this behavior. Examples are going to the gym when trying to get more physical exercise and performing boring but important tasks. In short, the immediate attractiveness of behavior is determined by the reflexive system, and the long-term desirability is determined by the reflective system.

Previous research has demonstrated that stop and start control can be empirically distinguished, and has shown that stop and start control differentially predict behaviors such as alcohol consumption and exercising (De Boer et al., 2011). In support of the theoretical distinction between the two different control processes, stop control was negatively related to alcohol consumption (attractive but undesirable) but not to exercising; start control was related to exercising (unattractive but desirable) but not to alcohol consumption. The present research extends previous work by focusing on different outcomes for stop and start control. In addition, we wanted to test the stop and start control scales on a sample of problem youths, in order to see if it could be used for this sample and whether the two-factor structure would hold up. Previously the scales have only been tested using a student population (De Boer et al., 2011). This research will test the distinction between stop and start control within a population of problem youths by means of factor analyses and measuring the test-retest reliability of the scales.

Core self-evaluation

CSE is a latent, higher-order trait indicated by: (a) self-esteem, (b) generalized self-efficacy, (c) neuroticism, and (d) locus of control (Judge et al., 1997; Judge et al., 2003). It was first introduced as a predictor of job satisfaction and job performance since it incorporates the main important factors that determine how people perceive their own efforts and the outcomes thereof. Although job performance is of importance to youths in the long run, after they leave juvenile institutions and find meaningful work, the present research focuses on the overall evaluations these youths have of themselves, during their stay in these institutions. CSE has previously been related to self-control in a study where both factors were predictors of substance abuse (Abikoye & Adekoya, 2010). We expected CSE to be related to their self-control capacity over time.

Self-control is part of the self-regulation process which theoretically involves three components (Carver, 2004; Karoly, 1993). First one needs to have certain standards for behavior or a goal. Second, one needs to monitor one's own behavior to see if any discrepancies between the behavior and the standard occur. Third, one needs to influence the behavior so that the actual behavior matches the standard. CSE likely affects all three of these components.

First, the way people perceive themselves will influence heavily whether they have standards for their own behavior and if so, how difficult or challenging these are. For instance people with very low self-efficacy or high

neuroticism may not set very high standard or goals, if they set them at all. Furthermore, one needs some sense of being in control, have an internal locus of control, in order to think these standards will have any effect. If youths believe that the outcomes they receive are merely a matter of chance based on outside events, they will not likely set any standards or goals for themselves. Consistent with this rationale, previous research has found that CSE positively related to goal setting and goal commitment for sales performance (Erez & Judge, 2001). Second, CSE likely influences the accurate monitoring of behavior. In order to control behavior, a certain degree of self-awareness is required (Baumeister, Zell, & Tice, 2007). When the self-image is under pressure, self-control abilities diminish. Very low self-esteem for instance could lead people to misrepresent actual events by either overemphasizing bad behaviors or underemphasizing good behaviors. High neuroticism may have a similar effect and may also lead to instability of monitoring such as only looking at behavior when things go wrong. Consistent with this rationale, both self-esteem and neuroticism have been related to different attentional biases (Dandeneau & Baldwin, 2004; Muris, de Jong, & Engelen, 2004). Lastly, CSE will relate to the amount of control one uses over one's own behavior. Again, locus of control may play an important role for the willingness of people to actually control their behavior. If individuals don't see their own behavior as directly related to the outcomes they receive, they have no reason to change their behavior. Only if individuals see the potential benefit of changing their behavior, will they take action when their current behavior is not in line with the standards or goals.

Overall, CSE will be positively related to self-control since its different aspects likely play a part in the larger self-regulation process. In order to control their own behavior, people will need to feel good about themselves, believe their efforts are worthwhile, have a stable emotional disposition and view their actions as influential and important. Conversely, it is known that any negative affect is dealt with before self-control of behavior takes place (Tice, Bratslavsky, & Baumeister, 2001). In other words, when an individual feels bad, most energy will go towards trying to feel better (i.e., mood repair), rather than to engage in self-control needed to perform unattractive but long-term desirable behavior. If a person holds very low self-evaluations, it is therefore likely that self-control capacity will suffer.

Thus, integrating theory and research on self-regulation, self-control, and core self-evaluations, we expect CSE to be positively related to self-control over time. However, since little is known about predictors of general self-control or their relations to stop and start control, we had no basis to expect differential results of the effect of CSE on stop and start control. We thus hypothesize that CSE will positively relate to both stop and start control over time (Hypothesis 1).

Performance

Self-control is seen as an important factor in predicting behavior that can be seen as positive for problem youth to return into society (e.g., academic performance; Duckworth & Seligman, 2005) as well as behavior that is seen as negative (e.g., aggressive behavior, DeWall, Baumeister, Stillman, & Gaillot, 2007). In the present study, performance was defined as behavior that is socially desirable, either by positive acts or the absence of negative acts, and that benefits the long-term outcomes of youths, such as schooling or work. In order to assess youths' performance, we asked the counselors of the youths in the juvenile institutions to indicate how well the youths were performing inside the institution. We used these performance ratings to investigate the effects of self-control capacity of youths on their behavior. The performance ratings were based on actual behaviors that the counselors felt were important for the youths to display, or not to display, in order to achieve successful careers after they left the institutions. The behaviors that were mentioned by the counselors as important were categorized into six categories: following rules (e.g., arriving on time), demeanor (e.g., not swearing), taking directions (e.g., starting a new assignment when asked), requesting information (e.g., inquiring about potential jobs), handling criticism (e.g., not walking away), and asking feedback (e.g., ask for extra instructions for a task).

Three categories of behaviors rated by the counselors were expected to relate to stop control: following rules, demeanor, and taking directions. We reasoned that these types of behaviors would most heavily rely on stop control ability of the youths; arriving on time (following rules) for instance will mostly constitute stopping pleasant behavior for these youths, since they have to leave their group and go to the counselor. In their group they may be playing a game or watching television which is attractive but will keep them from the desirable behavior of keeping their promise. Behaviors such as swearing (demeanor, reverse scored) may be habitual to some problem youth and is not beneficial for interpersonal contact in the long term. This is behavior that needs to be inhibited. Finally, some youths display problems when it comes to taking directions from authoritative figures, such as a teacher. Their first response may be to talk back. Desired behaviors, such as starting new assignments directly, are therefore likely dependent on stop control capacity. We hypothesize that stop control positively predicts objective performance in terms of following rules, demeanor, and taking directions (Hypothesis 2a).

Three categories of behaviors rated by the counselors were expected to relate to start control: requesting information, handling criticism, and asking feedback. These behaviors require an active effort to produce desirable outcomes, even when the actual behaviors themselves may not always be attractive. Requesting information on jobs or schooling, staying actively engaged when someone has just told you what you did wrong, or to admit you don't know what to do and ask for help, are all difficult tasks but worthwhile

doing for the youths in question. We believed these behaviors to be related to start control. We hypothesize that start control positively predicts objective performance in terms of effort, asking for help and handling criticism (Hypothesis 2b).

Present research

The present research investigates stop and start control in at-risk youths in juvenile institutions. First, the stop and start control scales will be tested in this sample. We hypothesize that a two-factor model of the self-control items, representing stop and start control, fits better to the data than a one-factor model, representing general self-control. Second, a theoretical model (see Figure 1) will be tested that incorporates the effect of CSE over time on stop and start control as well as the effects of stop and start control on performance.

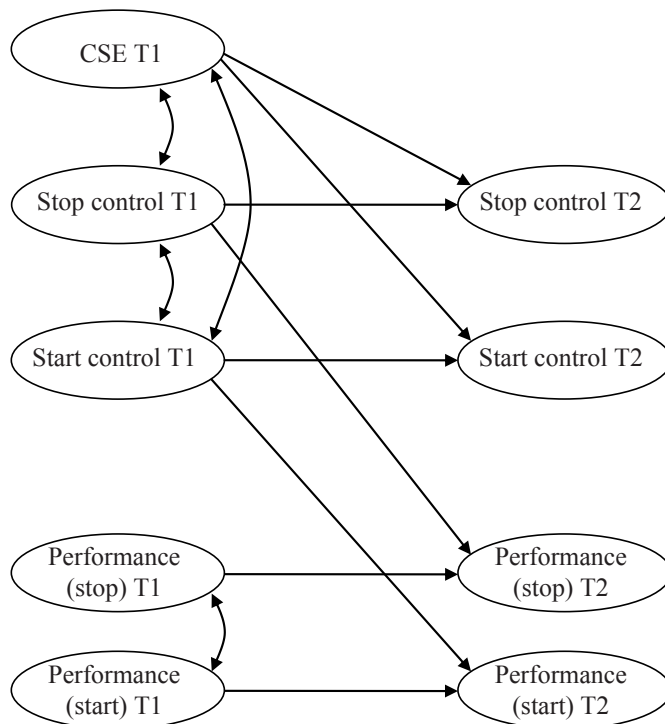


Figure 1. Theoretical model.

Method

Participants and procedure

Two juvenile institutions were approached for data collection. The youths in these institutions were there for different reasons. They had problems at school or at home, displayed violent or criminal tendencies, or they were at risk for these behaviors due to their home situation. It is important to note that these institutions were not judicial, since the youths were not sent there for criminal activities or as a form of punishment. Some youths had voluntarily admitted themselves to the institutions. The juvenile institutions at which this research took place were semi open institutions. The youths could leave if they wanted but the staff had the option of locking individuals in a room for a limited amount of time in order to protect them or others around them.

Prior to the research, youths with an IQ below 30 and youths that had not lived in the institutions for at least two weeks, were excluded from participation. All other youths residing in the institutions were invited to participate. Questionnaires were sent out on four different times, with three months in between. In this way, some youths filled out the questionnaires during the first data collection phase, where others participated for the first time during the second phase. Also, this method ensured the maximum number of participants for the longitudinal measures, requiring two completed questionnaires of each participant with three months in between ratings. The final pool of participants was split into two, the total group that filled out the questionnaires at least once, and a smaller part of this group that filled out the questionnaires at least twice. Unfortunately, not enough participants filled out the questionnaires on three or more occasions; hence this study only mentions results for two time points.

A total of 376 youths in juvenile institutions filled out paper and pencil questionnaires at least once. Age ranged from 12 to 19 years ($M = 15.7$, $SD = 1.4$) and 56.9% was female ($N = 214$). The majority of youths saw themselves as Dutch (67.3%). Surinamese (4.3%) and Moroccan (4.8%) were the next largest groups. These youths had been in the institution from 0.5 to 38 full months (rounded to full months, $M = 5.9$, $SD = 6.8$).

From 231 youths (61.7%) we received two questionnaires from subsequent time points. Age ranged from 12 to 19 years ($M = 15.6$, $SD = 1.4$) and 58.2% was female ($N = 135$). The majority of youths saw themselves as Dutch (63.1%). Surinamese (4.7%) and Moroccan (4.7%) were the next largest groups. These youths had been in the institution from 0.5 to 38 months ($M = 6.0$, $SD = 7.1$).

The set of 231 participants that filled out two questionnaires was compared to the participants that only filled out one questionnaire ($N = 145$) and no significant differences in CSE, stop control, start control or any of the demographic variables was discovered; CSE $F(1, 339) = 0.05$, *n.s.*, stop control $F(1, 339) = 0.98$, *n.s.*, start control $F(1, 335) = 0.85$, *n.s.*, age $F(1, 361) = 2.93$,

n.s., sexe $F(1, 373) = 0.52$, *n.s.*, ethnicity $F(1, 373) = 3.76$, *n.s.*, duration in institution $F(1, 305) = 0.14$, *n.s.*. We concluded that the attrition was random.

Measures

Stop and start control were measured using the stop and start control scales devised by De Boer et al. (2011). The 17 items were slightly adapted to better fit the target sample. The stop control scale has nine items, including: “I can easily stop doing something fun that I know to be bad for me”. The start control scale has eight items, including: “Even if I don’t feel like it, I’m able to complete the tasks that needed to be done”. All items are scored on 5-point scales (1 = *Fully agree*, 5 = *Fully disagree*). Cronbach’s α was .72 for the stop control scale and .76 for the start control scale for the complete sample of 376 youths on the first measurement.

CSE was measured using the Core Self-Evaluation Scales (CSES; Judge, et al., 2003). The 12 items were slightly adapted to better fit the target sample. Items included: “I feel in control over the events that happen in my life.” All items are scored on a 5-point scale (1 = *Fully agree*, 5 = *Fully disagree*). Cronbach’s α was .76 for the complete sample of 376 youths on the first measurement.

Performance was measured by having the counselors of the youths rate their current behavior. The questions used to rate the performance were constructed based on interviews with the counselors and aimed to measure behavior that they thought was beneficial both during the stay in the institution and for success after leaving the institution. First specific behaviors that should be performed or refrained from, were selected and put into separate items. Then a focus group of counselors judged the items on importance, applicability, and ease of use. Finally the items were grouped into categories and the items were subsequently ordered by categories on the questionnaire which the counselors were asked to fill out. Six items from three categories (taking directions, demeanor, and following rules) were used in this study to measure objective performance requiring stop control. Cronbach’s alpha for these six items was .77, in the total sample. Six items from three categories (requesting information, handling criticism, and asking feedback) were used in this study to measure objective performance requiring start control. Cronbach’s alpha for these six items was .78, in the total sample. A complete list of the items can be found in the appendix.

The counselors rated the youths on the specific behaviors using 5-point scales (1 = *Never*, 5 = *Very often*). Each counselor rated no more than three individuals and only those that were assigned to them in the institutions, prior to the research, as part of the treatment program. The counselors had knowledge of the behavior of the youths through regular conversations with them, observations, as well as regular meetings with other staff members concerning the youths.

Finally, in order to test whether we had been successful in devising a measure for performance that would relate to productive and adjusted behavior, each counselor was asked to give an estimate of the likelihood that the youth in question would return to a juvenile institution after leaving it, in percentages. A higher 'recidivism' score would indicate less successful adjustment of the youth during his or her stay. This measure showed significant negative correlations with each of the six categories used in this research (Taking direction, $r = -.34$, $p < .01$; Demeanor, $r = -.27$, $p < .01$; Following rules, $r = -.25$, $p < .01$; Requesting information, $r = -.24$, $p < .01$; Handling criticism, $r = -.22$, $p < .01$; Asking feedback, $r = -.23$, $p < .01$), supporting the validity of our performance indicators.

Analyses

First, in order to test whether the factor structure of the two-dimensional self-control was valid in this sample, confirmatory factor analysis was performed using AMOS 16.0 (Arbuckle, 2006) on the data of all youths. Two models were fit to the data: a one-factor model in which all 17 items loaded onto a single latent self-control factor and a two-factor model, in which the 9 items expected to represent stop control loaded on one latent factor and the 8 items expected to represent start control loaded on another latent factor. The latent factors were allowed to correlate. Model fit was assessed using multiple indices (Hu & Bentler, 1999). These were the chi-square statistic (χ^2), the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA).

Second, the theoretical model (see Figure 1) was fit to the data of youths with two completed questionnaires, in order to test the hypotheses concerning longitudinal effects. The same fit indices were used and standardized regression weights were calculated. The model includes 9 latent variables, namely Core self evaluation at T1, Stop control at T1 and at T2, Start control at T1 and at T2 and Performance at T1 for stop control and start control and at T2 for stop control and start control. In order to limit the number the total number of relationships to be estimated, these latent variables are all estimated by at least two manifest variables. Note that the total number of items measured is 41 at T1 and 29 at T2.

The theoretical model displays the hypothesized relations: CSE at T1 will explain variance in stop control at T2, while controlling for the effect of stop control at T1 (Hypothesis 1); CSE at T1 will explain variance in start control at T2, while controlling for the effect of start control at T1 (Hypothesis 1); stop control will explain variance in performance requiring stop control at T2, while controlling for the effect of performance on T1 (Hypothesis 2a); start control will explain variance in performance requiring start control at T2, while controlling for the effect of performance on T1 (Hypothesis 2b). The self-ratings

of the youths were expected to correlate at T1 and the ratings of the counselors were expected to correlate at T1 (see Figure 1).

Results

Stop and start control questionnaire

Means, *SDs*, alphas and correlations for all variables are displayed in Table 1. The Chi-square test was significant for both the two-factor model, $\chi^2(118, N = 376) = 527.06, p < .01$, and the one-factor model, $\chi^2(119, N = 376) = 622.42, p < .01$, which is not uncommon with large sample sizes. The proposed two-factor model, CFI = .71, RMSEA = .10, fit significantly and substantially better to the data than the one-factor model, CFI = .64, RMSEA = .11, $\Delta\chi^2(1, N = 376) = 95.36, p < .01$. Factor loadings in the two-factor model varied between .12 and .66 for stop control and between .18 and .75 for start control. All factor loadings were significant ($p < .05$). Test-retest correlation for stop and start control was .61 for both measures (see Table 1).

Although the test here was to see whether the two-factor model fit better to the data than the one-factor model; the fit indices of the two-factor model were not satisfactory on its own. Similar to De Boer et al. (2011) we allowed the errors of some items within one scale (stop control or start control) to correlate with other errors from items within the same scale, representing similar self-control domains. These relations represent variance shared by items covering the same domain, such as saving money, or dealing with distractions. Six correlations were formed in this way, three for stop control and three for start control. Model fit improved, and was satisfactory for the two-factor model, $\chi^2(111, N = 376) = 263.09, p < .01$, CFI = .90, RMSEA = .06. Furthermore, the two-factor model with these correlated errors still fit better to the data than the one-factor model with the same correlated errors, $\chi^2(112, N = 376) = 333.13, p < .01$, CFI = .84, RMSEA = .07, $\Delta\chi^2(1, N = 376) = 70.04, p < .01$.

Theoretical model

Standardized regression weights are displayed in Figure 2. The Chi-square test was significant, $\chi^2(187, N = 231) = 265.98, p < .01$. The fit indices indicated a good fit of the model to the data, CFI = .96, RMSEA = .04. Removing the no-significant paths from the model did not increase the model fit any further $\chi^2(189, N = 231) = 268.35, p < .01$, CFI = .96, RMSEA = .04, $\Delta\chi^2(2, N = 231) = 2.37, ns$.

Table 1.

Means, standard deviations and Cronach's alpha' self-control, CSE and performance measures.

	<i>M</i>	<i>SD</i>	<i>α</i>	1.	2.	3.	4.	5.	7.	8.	9.	10.
1. Stop control T1	3.09	0.78	.73	-								
2. Stop control T2	3.12	0.66	.63	.61**	-							
3. Start control T1	3.01	0.76	.78	.45**	.34**	-						
4. Start control T2	3.07	0.75	.79	.31**	.44**	.61**	-					
5. CSE T1	3.73	0.63	.78	.29**	.26**	.40**	.40**	-				
6. Performance (stop) T1	3.35	0.58	.74	.11	.10	.01	.09	-.06	-			
7. Performance (stop) T2	3.32	0.58	.76	.05	-.05	.07	-.04	.05	.48**	-		
8. Performance (start) T1	3.15	0.63	.81	-.01	-.01	.07	.10	.01	.36**	.17**	-	
9. Performance (start) T2	3.19	0.61	.80	.03	-.01	.22**	.05	.11	.18**	.44**	.44**	-

Note. CSE = Core Self-Evaluation. *N* = 231

*. $p < .05$, **. $p < .01$

We hypothesized that CSE will positively relate to both stop and start control over time (Hypothesis 1). Although both standardized regression weights for the effect of T1 core self-evaluation on T2 stop control and T2 start control were in the expected direction, only the effect on start control was significant. More specifically, the relation between Core self-evaluation on T1 and stop control on T2, controlling for the effect of stop control on T1, was .12 ($p > .05$). The relation between Core self-evaluation on T1 and start control on T2, controlling for the effect of start control on T1, was .19 ($p < .05$). These findings support Hypothesis 1 only for start control, not for stop control. In other words, youths with higher levels of CSE developed more start control (but not stop control) over time than youths with lower of CSE.

We hypothesized that stop control will be positively related to objective performance ratings of following rules, demeanor, and taking directions (Hypothesis 2a) and that start control will be positively related to objective performance ratings of effort, asking for help, and handling criticism (Hypothesis 2b). The effect of T1 stop control on T2 performance, controlling for the effect of T1 performance, was -.04 (*ns*). The effect of T1 start control on T2 performance, controlling for the effect of T1 performance, was .22 ($p < .05$). These findings support Hypothesis 2 only for start control, not for stop control. Thus, youths with higher levels of start control improved their performance in terms of effort, asking for help, and handling criticism in the institutions to a larger degree than youths with lower levels of start control.

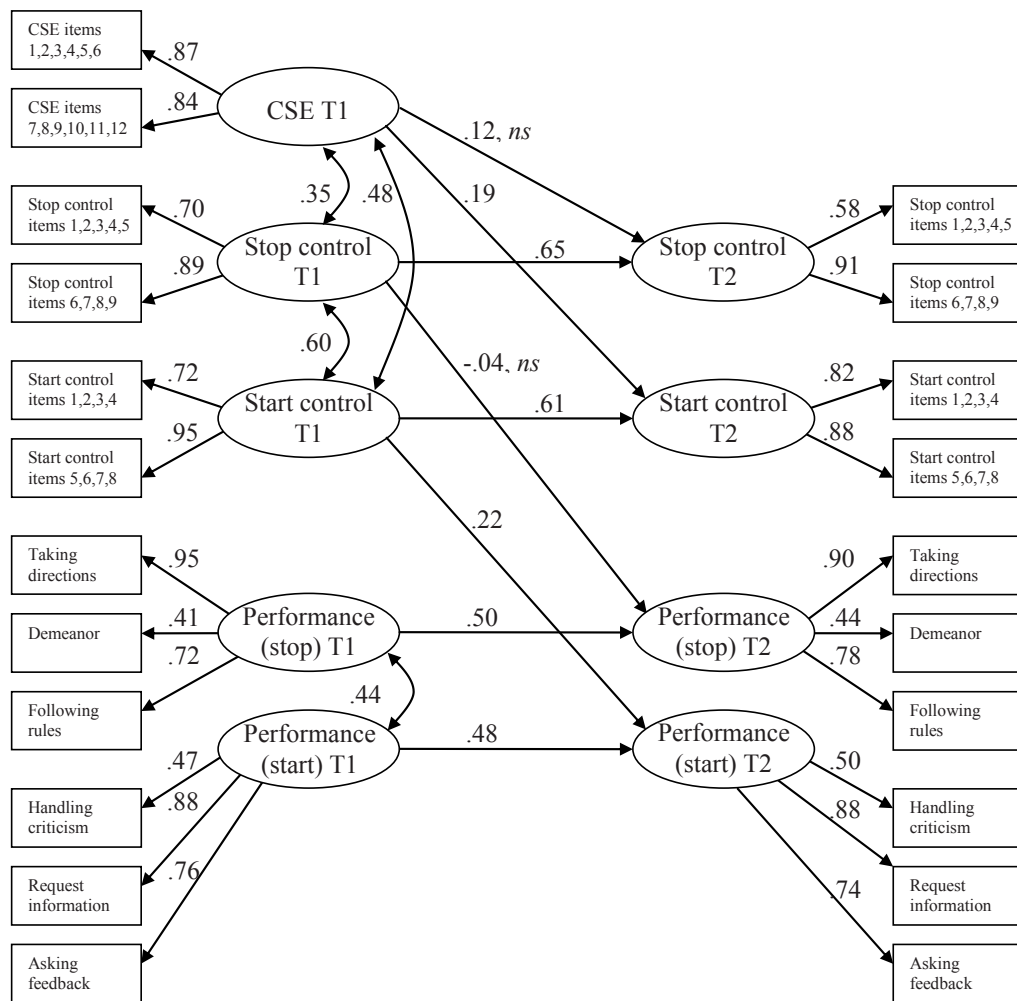


Figure 2. Panel design model, standardize maximum likelihood estimates ($N = 231$)

Discussion

The present research set out to investigate three related issues: 1) whether the constructs stop and start control could be used in a sample of troubled youths, 2) whether CSE is related to stop and start control over time, and 3) whether stop and start control are predictive of objective measures of performance. Results indicate that the stop and start control scales developed by De Boer et al. (2011) can be used in this sample, as all items had significant loadings unto the latent factors representing stop or start control in a two-

factor structure. Furthermore, this model fit better to the data than did a one-factor model. However, some factor loadings were relatively low. This indicates that better items representing stop or start control can be found for youths in juvenile institutions. Although the stop and start control distinction is valid, better representations of both stop and start control efforts and behaviors could be developed for further use in juvenile institutions.

Results further show that the two forms of self-control are distinct and are differently influenced by CSE. For start control, the effects were as hypothesized: a higher CSE is related to an increase in start control over time. For stop control, the hypothesis was not supported, although the relation found between CSE and stop control was in the expected direction and was similar in size as compared to the relation between CSE and start control. It could be that any increase in self-control requires more time than the three months taken in this study. Another possibility could be that CSE is a too broad construct and as such not the most relevant predictor of stop control, and other more specific precursors of stop control can be found. For instance a study by Oaten and Cheng (2007) showed that the behavior of spending money (low stop control) could be significantly reduced by means of improved record keeping, which is an explicit form of monitoring behavior. Future research should investigate the benefits of increasing just monitoring on other stop control behaviors as well.

Lastly, only start control was significantly related to objective measurement of performance over a three-month period. Stop control failed to be a valid predictor of performance over time. It is possible that the inhibition of behavior is not important for behavioral outcomes in a juvenile institution. However, this finding could also be due to the outcome variable not being adequately selected for stop control. The behaviors that were described by the focus group of counselors mainly contained positive behaviors, that is, they consisted of activities that, if performed, were found to be beneficial for future successes. Relatively few behaviors were formulated by the counselors that can be considered negative, such as swearing. Although it is true that for most of the positive behaviors to occur, one needs to stop impulsive responses (e.g., in order to arrive somewhere on time one needs to stop what one is doing and leave on time first; in order to listen, one needs to stop talking first). Perhaps these behaviors are less visible to the counselors. In general, stopping behavior might be as important for positive outcomes but far less visible, since successful stop control produces no actual behavior. Quitting smoking for example, requires stop control but when successful entails not smoking, which is far less visible than smoking (unsuccessful stop control). Alternatively successful start control is far more visible than successful stop control. If youths can effort fully get themselves to behave in ways that are considered positive, it is likely that this gets noticed by their counselors. This problem can only be circumvented by explicit record keeping of, for instance, aggressive behavior and alcohol or drug abuse and relating stop control to these outcomes. Previously, stop control has

already been related to self-report measures of alcohol use and smoking (De Boer et al., 2011).

Theoretical implications

The present study findings show that CSE is related to increases of self-control over time. Although effect sizes are small, an increase of self-control over a period of three months is noteworthy in itself. When youths in a juvenile institution have higher CSE, their self-control is more likely to increase over time, which, combined with the findings of Muraven et al. (1999) that self-control can be increased through practice, provides useful insights for developing new training programs for these youths. For instance, one of the institutions in this research had a program called 'who I am' in which the participants explored their own strong characteristics and improved their self-efficacy through exercises and discussions. Extending such programs to include self-control tasks related to the characteristics may prove beneficial for the overall performances of the youths involved.

This research has shown that the effects for stop and start control are distinct. It is still unclear whether stop control capacity of youths can be increased and whether it is useful for their performance. This is a somewhat paradoxical finding since most anti-social or problem behaviors linked to impulse control consists of short-term attractive behavior that is undesirable in the long term, such as substance abuse, violence and theft, which require stop control not to perform. It may be so that for these youths it is not enough to stop the negative behavior but that they need to start positive behaviors in order to achieve success in life. If so, the counselors are right to mostly focus on these behaviors when rating their behavior as productive for future careers and well adjusted lives.

Limitations and future research

The present research has tried to take into account the heterogeneity of the sample group. The participants that filled out questionnaires had a wide variety of behavioral and emotional problems and varying backgrounds. The items in the questionnaires have been adjusted to better fit with this sample but this might also have caused some constructs to have a lower external validity. The performance ratings were acquired from the counselors in order to objectively measure the beneficial performances of the youths in institutions. Future research could investigate even more objective measures such as number of reported criminal activities after the youths leave the institutions. Another point is whether the youths themselves experience beneficial effects of the increased self-control. Although the self-control ratings were self-report, it might be so that the youths themselves are unaware of the change and direct feedback might help in the process of increasing their ability to control their behavior. Feedback measures should be added in future research. Lastly, the

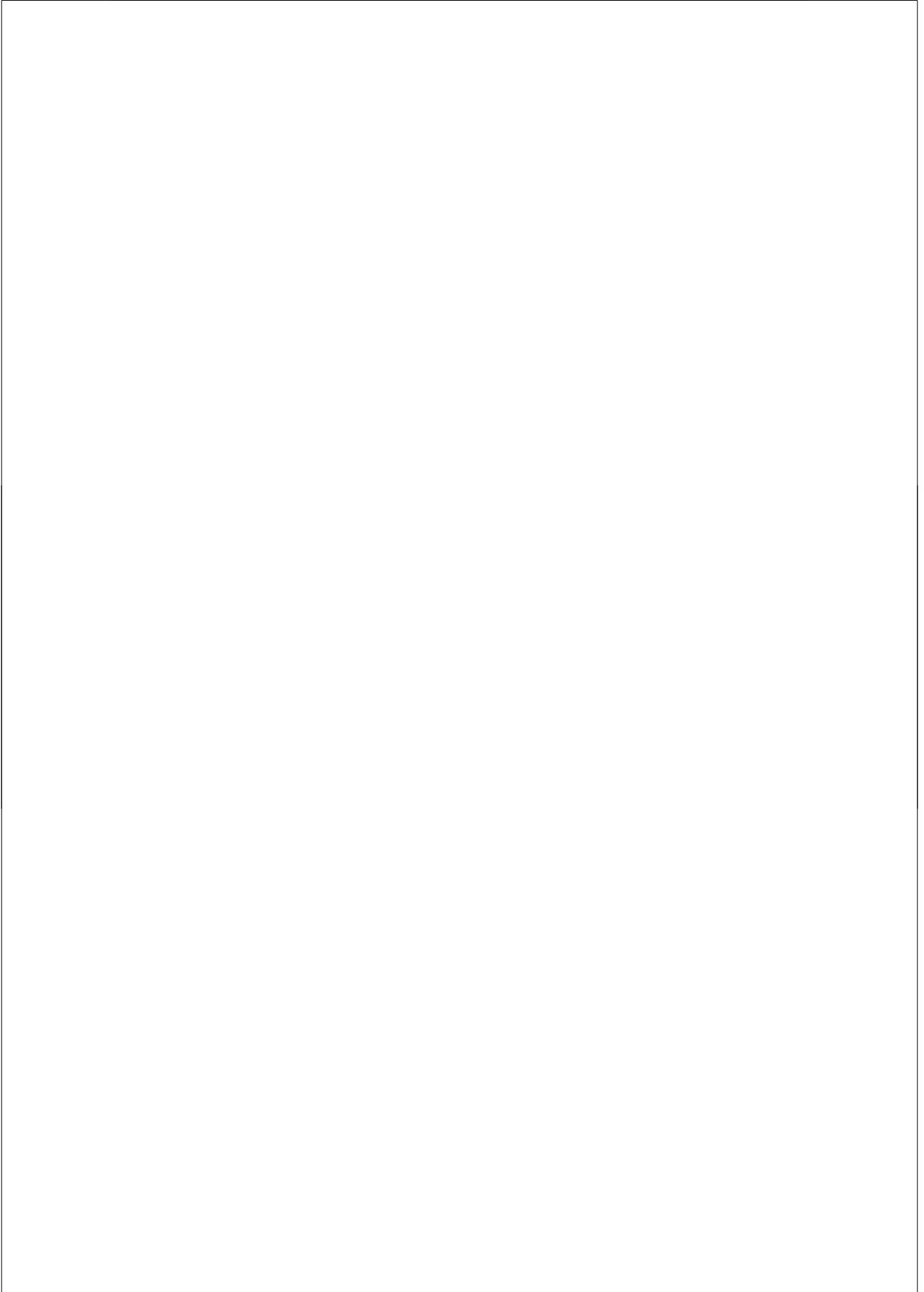
effects of CSE on self-control might be cyclical in that an increased self-control over time increases the chances of successfully completing a program or related task, which may eventually increase self-esteem and self-efficacy, important parts of CSE.

Conclusion

This paper has shown that CSE is related to increases of self-control over time and that self-control contributes to their performance ratings as rated by their counselors. This is however only proven to be the case for start control, which is a separate form of self-control, distinct from stop control. The distinction between these two types of self-control proves useful for problem youths. These results can be valuable starting points for the development of new programs for youths in juvenile institutions.

Chapter 6

Summary and discussion



This dissertation presents eight different studies that investigated the value of distinguishing between stop and start control within the self-control construct, combined in four chapters. The studies were aimed at different behaviors that involve self-control efforts and identified other personality constructs that differently relate to the ability to stop behavior or initiate behavior. Throughout these studies, the main question has been whether the theoretical distinction between stop and start control was a valid one. I will now summarize the findings in this dissertation and then turn to a discussion.

Summary

In chapter 2, the distinction between stop and start control was first introduced by means of a theoretical approach to the self-control literature and some interesting findings concerning self-control outcomes of not performing and performing behaviors. In this chapter, the stop and start control scales were developed through three separate studies. Using these scales in a student sample, two behaviors, drinking and smoking, were found to only relate to stop control, not to start control and two behaviors, studying and exercising, were found to only relate to start control, not stop to control.

In chapter 3, the distinction was tested again in a student sample, but this time the aim was to build a nomological net. This was done by investigating personality variables related to the self-regulation process that were expected to differently relate to the ability to stop or start behavior by means of self-control. No actual behavior was measured, instead, different constructs known to influence the way in which people view the world and how people behave, were related to stop and start control. The study presented in this chapter showed that, indeed, stop control and start control show different relationships to personality variables such as regulatory focus, the Behavioral Inhibition System (BIS), the Behavioral Activation System (BAS), conscientiousness, and impulsivity. For instance, stop control was positively related to BIS where start control was negatively related to BIS.

In chapter 4, the stop and start control distinction was tested in three separate studies, among working individuals. This study was performed to show that the distinction was valid in different settings and populations. Both stop and start control were related to different forms of contextual performance. The studies presented in this chapter showed that mostly start control was related to positive outcomes in the organizational context, as it was related to proactive coping, personal initiative and organizational citizenship behavior. Both stop and start control showed a negative relationship with counterproductive work behavior.

In chapter 5, the possible positive effect over time of core self-evaluation on self-control was tested among youths in a juvenile institution. In the longitudinal study presented in this chapter, it was shown that a high positive self-evaluation was paired with an increase in start control. The relation

between high positive self-evaluation and an increase in stop control was not significant. Also, only start control proved a significant predictor of performance measures for youths in the juvenile institutions.

Research questions

The main question for the research presented in this dissertation was whether the theoretical distinction between stop and start control was a valid one. Throughout the studies, the answer to this question was sought after using three guiding questions for research: a) *Can stop and start control be empirically distinguished using a questionnaire?* b) *Do stop and start control relate differently to important outcomes?* c) *Are the capacities for stop and start control differently related to other personality characteristics?* I will now discuss each of these questions separately before turning to an overall discussion of the findings.

Can stop and start control be empirically distinguished?

The first question that needed to be answered in order to further investigate stop and start control was whether stop and start control could be empirically distinguished using a questionnaire. Although many times general self-control has been investigated with the use of experimental designs (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998), such as a cold pressor task (Schmeichel & Zell, 2007), I found that a questionnaire approach would be most suited to study the distinction within self-control if I also wanted to test its external validity. External validity refers to the ability of research findings to be generalized to other populations and conditions. I wanted to be able to test the distinction in other samples besides students (chapters 2 and 3), such as working adults (chapter 4) and youths in a juvenile institution (chapter 5). Using an experimental design would make this much more difficult. For instance working individuals already show some reluctance to filling out a questionnaire, asking them to perform different experimental tasks would have seriously diminished the participation rates. In order to fully investigate the stop and start control distinction it was important to investigate its external validity by using different samples and for this a questionnaire would be best suited.

There are different ways of constructing a questionnaire aimed at measuring a distinction within an existing construct: 1) one could create two entirely new questionnaires, with new items; 2) one could combine items from different existing questionnaires, into two separate sets; or 3) one could use a single existing questionnaire and determine, for each item in it, to which set it belongs. I chose not to start out with the first method since already various self-control questionnaires exist (e.g., Letzring, Block, & Funder, 2004; Rosenbaum, 1980; Tangney, Baumeister, & Boone, 2004). Instead, I chose to use existing questionnaires so that I could be sure that the items already measured self-control, satisfying a large part of the criteria of construct validity

for the new scales. Construct validity refers to whether a questionnaire measures the theorized psychological construct that it intends to measure. The aim of this dissertation was to show that stop and start control are different types of self-control, and it was expected that both forms would be adequately represented within the existing measures for general self-control. Since these self-control questionnaires are each developed in a different field of psychological research, and I also intended to test the external validity of the new stop and start control scales, I chose the second option; I selected different existing questionnaires and used items from those measures to create new scales for stop and start control.

The introduction of the stop and start control scales in a new questionnaire, able to distinguish between the two forms of self-control, was first put forward in chapter 2. In a pilot study, experts from different psychological fields were asked to rate items from three existing self-control questionnaires as representing either stop or start control. The stop control and start control items were then analyzed through factor analyses and finally rewritten to exclude any possible confounds that would threaten the internal validity of the findings that would be gathered with the questionnaire. Internal validity is threatened if the scores on a questionnaire are affected by factors other than the intended construct, in this case item length and reverse coding. Eventually, the scale construction for stop and start control was a combination of the first and second procedural options; existing questionnaires were used but items were also rewritten. I acknowledge that different procedures may result in different outcomes. In chapter 3 the findings for the stop and start control scales were compared to that of a different questionnaire (De Ridder et al., 2011) aimed at measuring similar constructs but constructed using the first procedural option, and it was found that the results were highly comparable.

The stop and start control scales presented in chapter 2 were tested in three different settings: students (chapter 2 and 3), working adults (chapter 4) and youths in a juvenile institution (chapter 5). In all three settings, the scores on the questionnaire were factor analyzed and a two-factor solution, portraying separate constructs for stop and start control, consistently fit the data better than a one-factor solution, portraying general self-control. Stop and start control were mostly moderately correlated ($r = .17$ - $r = .45$). This interrelatedness was as expected, based on the theoretical distinction. Although stop and start control are separate constructs, there are relations that affect general self-control as a whole, that would affect stop and start control in the same way. For instance, an individual's tendency to focus on long-term outcomes will affect both the capacity for stop control as well as for start control.

Furthermore, although the exact factor loading of each item varied somewhat from sample to sample, all items had significant factor loadings throughout all studies, with the exception of item 4 for stop control (*I stick to*

the rules even if I find them unreasonable) in a study with working adults (chapter 4). This shows that my intent, to select items that can measure self-control in different settings, was largely successful. However, the questionnaire could still use some improvements, especially if its use is continued in the work and organizational field.

Overall, the results from all chapters combined show that stop and start control can indeed be separately measured with a questionnaire. The first research question can therefore be answered affirmatively. Stop and start control represent different forms of self-control and it is possible to measure each of these forms independently. This was an important conclusion, moving forward in the research.

Do stop and start control relate differently to important outcomes?

Now that it was possible to measure stop and start control separately, it was necessary to find out whether these two forms of self-control could predict behavior separately and whether there were behaviors that could be uniquely related to either of the two forms. This is an important question to ask because it would show the usefulness of the theoretical distinction. That is, if stop and start control displayed exactly similar relations to different behaviors then there would be no point to distinguish between the two. Conversely, if stop and start control displayed different relations with behaviors, then the distinction would not only be valid but useful as well, for theoretical purposes as well as practical ones. For instance, chapter 2 showed a unique relation between stop control and alcohol consumption. If one has behavioral problems with drinking alcohol, it would be pointless to try and increase start control efforts.

Two separate steps were taken in this research in order to answer this second research question. First, based on theory, we identified different behaviors, known to relate to general self-control, for which on theoretical grounds separate relations with stop and start control could be argued. For instance, in chapter 2, drinking (Muraven & Shmueli, 2006), smoking, studying (Tangney et al., 2004), and exercising (Kennet, Worth, & Forbes, 2009) were selected as behaviors either related to stop control or start control. All these behaviors have previously been identified as related to self-control capacity. If these behaviors would be related to only one of the two forms of self-control, this would be further evidence that stop and start control are indeed distinct.

After showing that stop and start control were differently related to behavioral outcomes, a second step could be taken: investigating behavioral outcomes not previously linked to self-control capacity, based on the theoretical distinction between stop and start control. This extends not only the knowledge of stop and start control and its distinction but the knowledge of self-control in general. I will now discuss all findings in this dissertation related to self-control outcomes.

As mentioned, chapter 2 showed that drinking, smoking, studying, and exercising, are behaviors uniquely related to either stop control or start control. Stop control was negatively related to drinking and smoking; start control was not related to these outcomes. Start control was positively related to studying and exercising; stop control was not related to these outcomes. One study in this chapter was also aimed at outcomes indirectly representing behavior, namely affect. Findings show that stop control is negatively related to negative affect and not to positive affect; start control is positively related to positive affect and not to negative affect. These findings established the first step; stop and start control can be separately and uniquely related to well-known outcomes of self-control.

The second step was undertaken in chapters 4 and 5. Chapter 4 focused on the relationship between self-control and work-related outcomes. Chapter 5 was directed at the relationship between self-control and behaviors in a juvenile institution. Results show that both stop control and start control relate negatively to counterproductive work behavior. Start control was positively related to proactive coping, personal initiative, and organizational citizenship behavior; relations that were not shared with stop control. In the juvenile institutions these findings were extended: start control was positively related to behaviors generally considered to be positive and stop control was not. Although chapter 4 and 5 did not show any relations unique to stop control, they did show that different relations with start control exist that could not be found for stop control, showing that stop and start control differently relate to behavioral outcomes.

Overall, these findings suggest that there are different outcomes for stop and start control, which answers the second research question. The findings span different fields such as health and work behaviors and further show the usefulness of the stop and start control distinction in different fields of psychological research. Lastly, these findings support the validity of the stop and start control distinction.

Are the capacities for stop and start control differently related to other personality characteristics?

From a research point of view, the third research question, whether stop and start control capacities can be differentially related to other personality characteristics, is very similar to the second research question. That is, can stop and start control be differently related to other constructs? The importance of this third research question to the overall research is therefore the same as the previous one; the different relations of stop and start control with other constructs would show the validity of the distinction as well as its usefulness. From a theoretical point of view, however, the third research question is very different. In the past years self-control has gained enormous attention, but still little is known about the origin of self-control as a capacity. As summarized in

the introduction to this dissertation, we know that this capacity can differ between people, between situations, and can possibly be increased over time. We don't know, however, how the capacity is influenced by other personality constructs and whether these constructs could be used to increase the self-control capacity of a person. Although empirically it is difficult to exclude the possibility that the direction of causality in relations with personality is reverse, or that there is a third influential factor present, I found it theoretically important to investigate the last research question separately.

In chapter 3 a nomological net was presented for self-control, based on the stop and start control distinction. In this chapter, it was shown that stop control was positively related to BIS and negatively to BAS and impulsivity. Start control was negatively related to BIS and not related to BAS. Furthermore, its negative relation with impulsivity was much weaker. These findings were as expected, based on the stop and start control distinction and theory. This shows the value of the stop and start control distinction.

In chapter 5, core self-evaluation was examined as predictor of stop and start control over time. It was found that core self-evaluation displayed a significant positive relation with start control over time, but not with stop control. The different findings for stop and start control and their relation with core self-evaluation as predictor displays potential for other differential predictions as well.

In conclusion, the third research question can be answered affirmatively. Together with the answers to our first and second research question this provides a very stable conclusion to the overall question of this thesis. The stop and start control distinction is indeed a valid one. I will now turn to a discussion of these findings.

Discussion

Overall, the research findings presented in this dissertation have adequately supported the stop and start control distinction that was put forward. The distinction separates the effortful inhibition of undesired behavior from the effortful activation of behavior, where previously there was just effortful changing of behavior. This separation can be valuable to research as well as practice. Before turning to the implications of the findings and where it could potentially stimulate new research, I will first look at the findings with some more scrutiny in order to fully understand what has been put forward in this dissertation.

Strengths and limitations

The research presented here was performed in different settings in order to improve the external validity of the findings. The findings of chapter 2, considering the measurement of the distinction, were cross validated in chapters 4 and 5. Where some self-control questionnaires are limited to use in

only one research field, the distinction is shown to be valid in at least three fields, namely students, working adults and youths in juvenile institutions, and believed to be valid in all fields.

Another strength of this research is the consistency of the findings concerning the two types of self-control. All three chapters that discuss factor analyses find a better fit to the data for a two-factor structure of the self-control items than a one-factor structure. The fit of the questionnaire could be increased by letting various errors of items correlate. This indicates that, similar to questionnaires for general self-control, stop and start control have several sub-factors, possibly relating to specific behavioral domains such as diet or saving money. Although the questionnaire that is used for these analyses could certainly be improved and better fit measures could be obtained, the consistency of these findings add to the validity of the distinction.

One limitation to the research is that no actual behavior, that is the direct measurement of a task or performance, was used in the studies. In chapter 2 the students were asked to rate their own behavior and in chapter 4, the employees were asked the same. The notable exception to this is chapter 5, where the mentors of the youths were asked to rate the behavior of the youths. Although this still does not measure actual behavior directly, it is a less subjective measure of performance compared to using self-report measures. Furthermore, the self-ratings for behavior do not necessarily hinder any conclusions for the stop and start control distinction. If social desirable answers were a problem, then the participants would have had to differently rate themselves on the stopping behaviors than on the starting behaviors, without knowing which were which and where both represent social desirable behaviors. Only then would the distinction be apparent through confounding of social desirability and this is highly unlikely.

A possible limitation of the studies is the heavy reliance on one single questionnaire for the assessment of stop and start control. However, in chapter 3 another questionnaire was used (De Ridder et al., 2011) for which highly similar findings were produced. Also, all relations that were hypothesized were based on the theoretical distinction, not the questionnaire. Great care was taken to exclude actual behaviors from the questionnaire before relating it to behavioral outcomes in order to exclude confounds. I expect that if any new measurement for stop and start control is developed or any changes are made to the one used in this dissertation, the overall findings will remain the same.

As a final note, it is important to know that most of the research in this dissertation was cross sectional. Although great effort was put into investigating the stop and start control distinction in different settings, using different populations and research methods, most of the findings cannot adequately prove the directions of causality in the relations of stop control or start control.

Theoretical implications and future research

The most obvious implication of the research presented here is that having a high stop control does not necessarily imply a high start control. Even though stop and start control show a moderate correlation throughout the studies, they are distinct and people can experience difficulties or success with self-control for both forms separately. As shown in this dissertation, this knowledge can lead to new research in areas where either stop or start control plays a role. Also, when looking for antecedents for either forms, theoretically, or ways to increase self-control practically, this knowledge may be of great importance. An interesting aspect of this is that stop and start control may actually interact for some behaviors. Although, as explained in chapter 2, the occurrence of both forms of control would then be serially rather than simultaneously, the effects of one form of self-control may actually be enhanced by the other form. For instance, future research could focus on healthy eating habits as a mix of both not indulging in delicious but fattening foods and selection and preparation of nutritious foods. Being able not to indulge in fast food may actually make it easier to go out and buy other foods, and conversely, getting oneself to effortfully engage in healthy practices may actually diminish the amount of control that is required for refraining from unhealthy ones.

The distinction put forth in this dissertation fits well with theoretical work on the self-control process (Carver, 2005; Metcalfe & Mischel, 1999). Furthermore, the distinction between stop and start control shows possibilities for extending these theories. The combination of knowledge on the reflexive and reflective systems together with a distinction between stopping and starting can lead to interesting insights. Terms such as effortful action, effortful restraint, impulsive approach and reflexive inhibition (Carver et al., 2008), for example, can be used to further our knowledge of the reflective and reflexive functions and the effects they have on our behavior.

For different research fields where self-control is already an important factor, the distinction between stop and start control can lead to new insights. An example of this is the research of procrastination, which has already been linked to control processes (e.g., Blunt & Pychyl, 2005; Steel, 2007). Looking separately at procrastination due to an inability to avoid unnecessary behavior, or procrastination due to not being able to get started, may prove very useful. Some procrastinators may mostly be unable to stop when they are being unproductive and others may mostly be unable to start their work, even when they have nothing else to do. Just this knowledge may already benefit procrastinators for it can aid their monitoring of behavior, required for successful self-regulation.

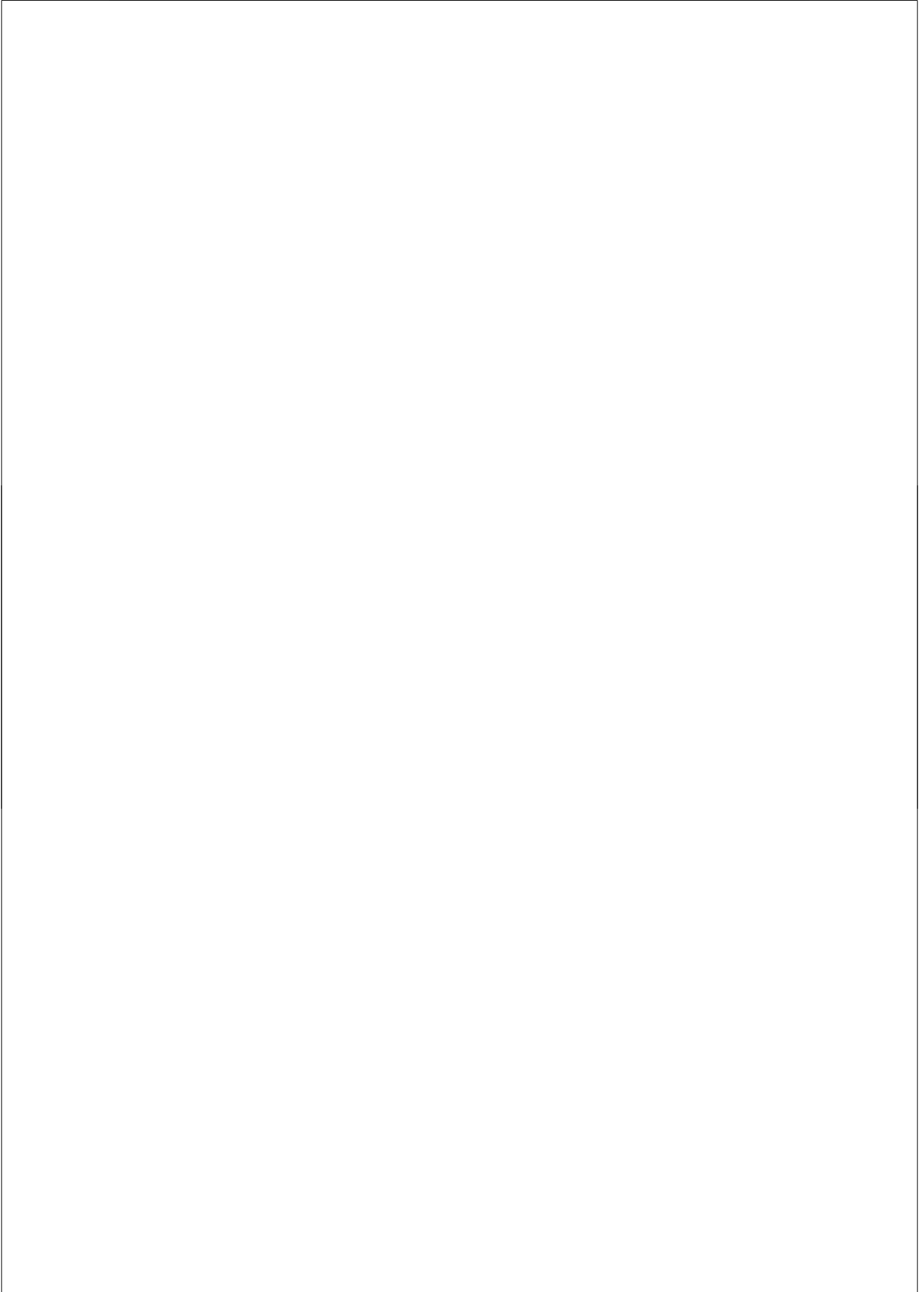
Regarding the origin or psychological basis for the distinction, much is still unknown. It might be that, like in BIS and BAS (Boksem, Tops, Wester, Meijman, & Lorist, 2006) there are biological or neurological explanations for any differences in self-control capabilities between people, for both forms.

However, as presented in chapter 3, I believe that early learning experiences and modeling may play a role. This also fits with the findings for affect in chapter 2. More research, however, is needed to find out more about the origins of stop and start control. This will also be important for the possibility to increase self-control. Since there are proven to be many positive outcomes of the capacity to control behavior, increasing self-control will be very useful.

Future research should also focus on other parameters that allow for distinctions within self-control and whether there are links with other personality factors that could be of importance. In this dissertation, mainly conscientiousness and impulsivity have received attention as traits closely related to self-control. The overlap and boundaries of these constructs with stop and start control provide valuable knowledge for the development of the self-control construct. The nomological net presented in chapter 3 also provides more insight into the characteristics of both forms of self-control. Other constructs that might be of interest are intrinsic and extrinsic motivation, goal setting and feedback. These constructs lend themselves well for lab research, for instance using a cold-pressor task as a measure for behavioral self-control. Lastly, self-control research can be applied in other, different fields, such as education and sports, for which the contribution of the distinction may be valuable.

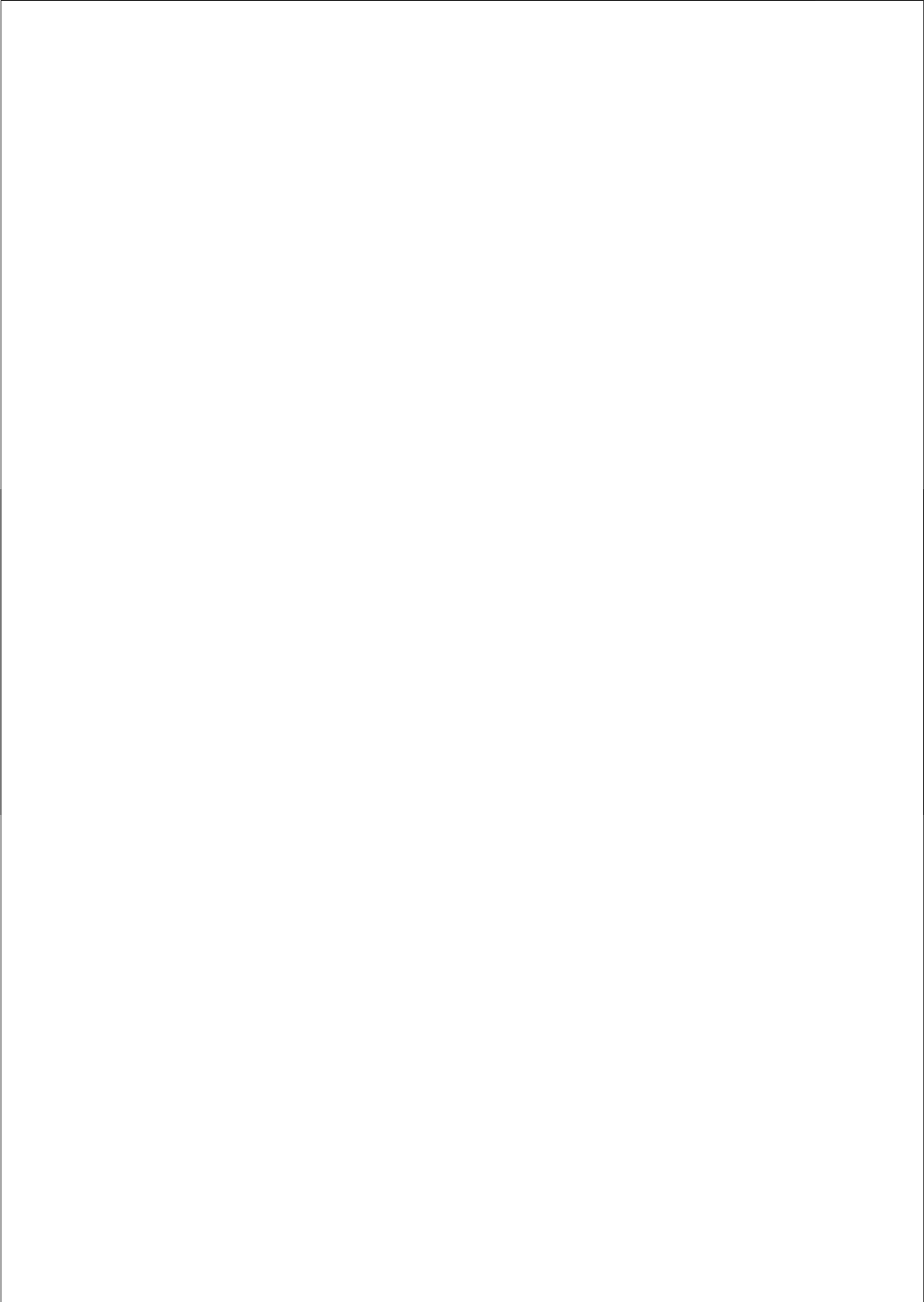
Conclusion

The theoretical distinction between stop control and start control, presented in this dissertation has proven to be both valid and useful. It is possible to distinguish between both forms of self-control using a questionnaire and different outcomes as well as precursors can be found for both stop control and start control. It has been shown that effortful control aimed at inhibiting behavior is different from effortful control aimed at initiating behavior. This knowledge has extended self-control theory and allowed for more specific predictions of well-known self-control relations. Furthermore, distinguishing between stop and start control has led to new predictions regarding behaviors previously unrelated to self-control. As such, the distinction between stop and start control is a valuable addition to the ongoing research into human behaviors and the capacity to control our own functioning.



Samenvatting

Summary in Dutch



De essentie van zelfcontrole is het vermogen van mensen om hun eigen gedrag te sturen. Binnen alle mogelijke gedragingen, aangestuurd door verschillende interne en externe drijfveren, verwachtingen, beloningen, bedreigingen en doelen, hebben mensen de keuze, tot op zekere hoogte, welk gedrag zij vertonen. De definitie van zelfcontrole is eens vastgesteld als het opleggen van controle over het zelf, door het zelf (Muraven & Baumeister, 2000) en als zodanig is het een van de krachten die menselijk gedrag vormgeven. Door zelfcontrole kunnen mensen ervoor kiezen om niet het plezierige te doen wanneer dat uiteindelijk nadelige gevolgen zal hebben, zoals het overslaan van een heerlijk nagerecht teneinde af te vallen; en mensen kunnen ervoor kiezen het moeilijke of vervelende te doen om wille van een uiteindelijke voordeel, zoals sporten voor een betere gezondheid. Het onderzoek in dit proefschrift laat zien dat deze voorbeelden eigenlijk van twee verschillende vormen van zelfcontrole afkomstig zijn, namelijk stopcontrole en startcontrole.

Zelfcontrole theorie

Zelfcontrole is beschreven als het veranderen van automatische reacties op een bewuste manier (Baumeister & Vohs, 2004). Door signalen in de omgeving zijn mensen geneigd om bepaald gedrag te vertonen. Bij de meeste mensen zal een goede grap bijvoorbeeld de gedragsrespons van lachen uitlokken. Deze en andere automatische reacties zijn normaal en kunnen zelfs de prestaties verbeteren. Men zou niet eens veel gedaan krijgen als elk gedrag bewust zou moeten worden bepaald. Soms kan de directe automatische reactie echter schadelijk zijn voor de prestaties. Een persoon die zich voorneemt te stoppen met roken bijvoorbeeld, zal nog lange tijd de automatische respons van het roken hebben bij bepaalde signalen uit de omgeving en zal, zonder bewuste aandacht, daardoor mogelijk weer gaan roken.

Mensen verschillen van elkaar wat betreft welk gedrag zij moeilijk vinden, hoeveel zelfcontrole zij hierbij kunnen gebruiken en de hoeveelheid zelfcontrole die ze nodig hebben om het gedrag uiteindelijk al dan niet te vertonen. Voor de één is het bijvoorbeeld moeilijker om een nagerecht over te slaan dan voor de ander. Deze verschillen betreffende noodzaak, kracht en uitkomsten van zelfcontrole, kunnen verklaard worden met behulp van de twee-systemen theorie van Metcalfe en Mischel (1999). Deze illustreert hoe automatisch gedrag en bewust gedrag tot stand komen. De theorie beschrijft een 'hot', emotioneel, *reflexief* systeem en een 'cold', cognitief, *reflectief* systeem. Het reflexieve systeem is snel en opereert onder stimulus controle. Het reflectieve systeem is traag en opereert onder zelfcontrole. Activiteit in het reflexieve systeem wordt veroorzaakt door een stimulus, bijvoorbeeld een gebeurtenis, een emotie of een object in de omgeving. Welke zaken precies dit systeem activeren hangt af van biologische determinanten (zoals hersenchemie), voorgaande ervaringen en behoeften. Zo zal een alcoholist meer aandacht geven aan een glas bier dan iemand die nooit drinkt en een hongerig persoon zal meer aandacht geven aan

de geur van voedsel dan een persoon die net heeft geluncht. De activiteit in het reflexieve systeem zal gedrag oproepen dat, bij afwezigheid van verdere overweging, direct zal worden uitgevoerd. Voorbeelden van gedrag dat puur door het reflexieve systeem gestuurd wordt, kunnen gevonden worden in bekende reflexen zoals het opschrikken bij een hard geluid of het terugtrekken van een hand bij aanraking van een heet object. Gedragingen aangestuurd door het reflexieve systeem zijn gericht op korte termijn uitkomsten, zoals veiligheid, plezier en genot.

Het reflectieve systeem daarentegen heeft niet per se een externe stimulus nodig om geactiveerd te worden. In plaats daarvan is het meer bewust betrokken bij gedrag maar reageert het ook trager. Activiteit in het reflectieve systeem is gericht op lange termijn uitkomsten of hoger gelegen doelen, zoals gezond zijn of een goed persoon zijn. De specifieke uitkomsten of doelen verschillen tussen personen, gebaseerd op hun wensen, verlangens en mogelijkheden, wederom terug te voeren tot biologische determinanten en voorgaande ervaringen. Voorbeelden van gedragingen die puur door het reflectieve systeem worden gestuurd, kunnen gevonden worden in de meest voorkomende goede (nieuwjaars) voornemens, zoals het opgeven van slechte gewoonten, of het voltooien van een uitdagend project.

In het kort is het reflexieve systeem verantwoordelijk voor het meer automatische gedrag en is het reflectieve systeem betrokken bij de meer bewuste keuzes voor gedrag. Beide systemen kunnen tegelijk actief zijn en op dit punt wordt zelfcontrole belangrijk. Als het reflexieve systeem, gericht op korte termijn uitkomsten, gedrag oproept dat conflicteert met de lange termijn uitkomsten van het reflectieve systeem, zal zelfcontrole nodig zijn om het gedrag dat uitgelokt is door het reflexieve systeem te onderdrukken. Hoe groter de discrepantie tussen beide krachten, hoe meer zelfcontrole nodig zal zijn. Het proces van zelfcontrole heeft dus een feedback module in zich, waarin gedrag vergeleken wordt met een standaard of doel (Carver & Scheier, 1982). Als gedrag niet overeenkomt met de standaard, dan moet het niet worden uitgevoerd.

Het onderscheid tussen stopcontrole en startcontrole

Zelfcontrole is uiterst belangrijk bij het nastreven van lange termijn doelen en abstractere doelen. Zelfcontrole is daarom vaak nodig bij het tegengaan van ongewenst gedrag. Voorbeelden van zulk gedrag zijn het drinken van alcohol en roken. Het is aangetoond dat deze gedragingen verminderen door het gebruik van zelfcontrole (Baumeister et al., 1994; Muraven & Shmueli, 2006). In sommige gevallen echter is zelfcontrole nodig om gewenst gedrag te initiëren. Voorbeelden zijn studeren en sporten. Hoge zelfcontrole is gerelateerd aan betere academische prestaties (Duckworth & Seligman, 2005; Shoda, et al., 1990) en fysieke gezondheid (De Ridder & De Wit, 2006). Deze verschillende uitkomsten van zelfcontrole geven grond voor een onderscheid binnen

zelfcontrole, tussen het voorkómen van ongewenst gedrag en het initiëren van gewenst gedrag. Hoewel de twee vormen van zelfcontrole mogelijk een overkoepelend doel delen, bijvoorbeeld betere gezondheid, verschilt de methode waarmee de zelfcontrole het gedrag beïnvloedt op een belangrijke manier. Zelfcontrole gericht op het voorkomen van ongewenst gedrag zal het op korte termijn plezierige maar op lange termijn schadelijke gedrag stoppen. Zelfcontrole gericht op gewenst gedrag zal het op korte termijn minder plezierige maar op lange termijn nuttige gedrag juist initiëren. De uitkomst van de eerste vorm van zelfcontrole is dus géén gedrag, de uitkomst van de tweede vorm is daadwerkelijk gedrag. De essentie van het onderscheid dat hier gemaakt wordt, is door inzet van zelfcontrole iets niet doen en door inzet van zelfcontrole iets wel doen.

Dit proefschrift introduceert twee nieuwe vormen van zelfcontrole: stopcontrole en startcontrole. Stopcontrole wordt gedefinieerd als zelfcontrole gericht op korte termijn aantrekkelijk maar lange termijn onwenselijk gedrag, teneinde het gedrag niet uit te voeren. Startcontrole is zelfcontrole gericht op korte termijn onaantrekkelijk maar lange termijn wenselijk gedrag, teneinde het gedrag wel uit te voeren. De termen (on)aantrekkelijk en (on)wenselijk slaan terug op de twee-systemen theorie (Metcalf & Michel, 1999). De termen worden hieronder uitgelegd, voor stop- en startcontrole apart, met behulp van het zelfcontrole proces.

Voor stopcontrole geldt dat het gedrag waarop de zelfcontrole gericht is wordt opgeroepen door het reflexieve systeem. Dit systeem creëert een impuls of drang naar bepaald gedrag. Door deze impuls ervaart een persoon het gedrag als aantrekkelijk. Tegelijk heeft deze persoon ook enkele (zelfgestelde) doelen, expliciet of impliciet, die gewaarborgd worden via het reflectieve systeem. Dit reflectieve systeem bepaalt of het gedrag wenselijk is. Als het impulsieve gedrag namelijk overeenkomt met de gestelde doelen, dan is het gedrag behalve aantrekkelijk, ook wenselijk. Staat het gedrag het behalen van de doelen echter in de weg, dan is het onwenselijk. Om aantrekkelijk gedrag dat ongewenst is te vermijden, is stopcontrole nodig. Op deze manier is stopcontrole belangrijk om aantrekkelijk maar onwenselijk gedrag te stoppen. Merk op dat als het aantrekkelijke gedrag ook wenselijk gedrag is, er helemaal geen zelfcontrole nodig zou zijn. Tevens is de zelfcontrole die voortkomt uit de discrepantie tussen impulsief gedrag en de doelen afkomstig van het reflectieve systeem.

Voor startcontrole is het proces vergelijkbaar maar omgekeerd. Als een persoon doelen stelt voor bepaald gedrag, gebruikmakend van het reflectieve systeem, dan is dit gedrag wenselijk. Wanneer dit gedrag echter onaantrekkelijk is, zoals bepaald door het reflexieve systeem (moeilijk, saai, vermoeiend, eng, etc.), dan is startcontrole nodig om het gedrag te vertonen. In het kort wordt het onmiddellijke aantrekkelijke van gedrag bepaald door het reflexieve systeem en wordt het lange termijn wenselijke van gedrag vastgesteld door het reflectieve systeem.

Samenvattend, stopcontrole stopt aantrekkelijk gedrag als het niet wenselijk is en startcontrole start wenselijk gedrag als het niet aantrekkelijk is. Voorbeelden van stopcontrole zijn het niet slaan van iemand ook al heeft deze persoon je erg kwaad gemaakt, het niet doorvertellen van een geheim zelfs als het een geweldige roddel is en het niet televisie kijken wanneer je belangrijke zaken te doen hebt. Voorbeelden van startcontrole zijn het geven van eerlijke feedback ook als je bang bent voor de reactie, het doorwerken aan een project dat af moet ook zelfs als het laat is en ben je moe bent en het opnieuw beginnen aan een taak wanneer je dacht al klaar te zijn maar waarbij je ontdekte dat het resultaat niet klopte.

Onderzoeksvragen

De belangrijkste vraag van het onderzoek in dit proefschrift is of het theoretische onderscheid tussen stop- en startcontrole een valide onderscheid is. Deze vraag is omgezet in de volgende drie onderzoeksvragen: *a) Kunnen stop- en startcontrole empirisch worden onderscheiden met een vragenlijst? b) Zijn stop- en startcontrole verschillend gerelateerd aan belangrijke uitkomsten? en c) Zijn de capaciteiten voor stop- en startcontrole verschillend gerelateerd aan andere persoonlijkheidskenmerken?*

De eerste onderzoeksvraag betreft het theoretisch onderscheid zelf en heeft voor het beantwoorden een vragenlijst die in staat is beide vormen van zelfcontrole te meten. Omdat het onderscheid tussen stop- en startcontrole nieuw was, bestond er nog geen vragenlijst met aparte schalen voor stop- en startcontrole. Er was wel een vragenlijst voor algemene zelfcontrole. De eerste stap in het onderzoek is daarom geweest vast te stellen of stop- en startcontrole afzonderlijk te meten zijn. Als het theoretisch onderscheid valide is, dan zouden de capaciteiten voor stop- en startcontrole apart vast te stellen moeten zijn. De tweede onderzoeksvraag, betreffende de verschillende uitkomsten van stop- en startcontrole, vereist het afzonderlijk relateren van stop- en startcontrole aan verschillende variabelen. Als stop- en startcontrole verschillende uitkomsten hebben, dan is het onderscheid niet alleen valide maar ook nuttig voor verder onderzoek en voor de praktijk. Omdat algemene zelfcontrole van aangetoond belang is, is het kunnen vaststellen van de capaciteit ervan, of zelfs het verhogen van deze capaciteit zeer interessant. De derde onderzoeksvraag richt zich op het onderzoeken of stop- en startcontrole verschillende relaties hebben met andere persoonlijkheidskenmerken, die mogelijk de capaciteit om gedrag te controleren kunnen verhogen of verminderen.

Overzicht van studies

In hoofdstuk 2 wordt het onderscheid tussen stop- en startcontrole voor het eerst geïntroduceerd door middel van een theoretisch kader. Vervolgens wordt een pilotstudy beschreven waarin de items uit drie bestaande vragenlijsten voor algemene zelfcontrole aan experts zijn voorgelegd. Deze experts beoordeelden of

deze items stop- dan wel startcontrole representeerden. Vervolgens zijn de meest eenduidige items gebruikt om een vragenlijst met twee aparte schalen te ontwikkelen; één voor stopcontrole en één voor startcontrole. Deze vragenlijst is vervolgens gebruikt in een studie, uitgevoerd onder studenten, waarbij stop- en startcontrole gerelateerd werden aan roken, alcohol drinken, studeren en sporten. De verwachting hierbij was dat de gedragingen die veelal onwenselijk zijn maar wel aantrekkelijk (roken en drinken) negatief gerelateerd zijn aan stopcontrole en dat gedragingen die veelal wenselijk zijn maar niet altijd aantrekkelijk (studeren en sporten) positief gerelateerd zijn aan startcontrole. Dit houdt in dat stopcontrole geen directe relatie heeft met bijvoorbeeld sporten, evenmin als startcontrole een directe relatie heeft met roken. Tegelijkertijd zijn in deze studie de scores op de stop- en startcontroleschalen geanalyseerd met een confirmatieve factoranalyse. Hiermee kan worden vastgesteld of de geselecteerde items wel echt twee aparte constructen vertegenwoordigen en of deze constructen niet teveel overlap vertonen. Op basis van deze eerste studie zijn de items in de stop- en startcontroleschalen herschreven en aangepast om nog beter de afzonderlijke capaciteiten van stop- en startcontrole te meten. De studie is vervolgens herhaald met dezelfde gedragingen als uitkomstvariabelen, wederom bij een studentenpopulatie. De vragenlijst is nogmaals geanalyseerd met een confirmatieve factoranalyse en op basis van de resultaten zijn de gebruikte schalen uiteindelijk vastgesteld voor gebruik in verdere onderzoeken.

Hoofdstuk 3 beschrijft hoe het onderscheid opnieuw is getest met de vragenlijst in een studentenpopulatie, dit keer met als doel een nomologisch net te creëren. Dit is gedaan door stop- en startcontrole te relateren aan verschillende persoonlijkheidsvariabelen. Er is geen gedrag gemeten. In plaats daarvan zijn verschillende constructen onderzocht die betrokken zijn bij hoe mensen de wereld bezien en hoe zij gedragskeuzes maken. Variabelen in dit onderzoek, naast stop- en startcontrole, waren promotiefocus, preventiefocus, 'Behavioral Inhibition System' (BIS), 'Behavioral Activation System' (BAS), consciëntieusheid (nauwgezetheid of discipline) en impulsiviteit. De verwachting was dat stop- en startcontrole verschillend aan de persoonlijkheidskenmerken zouden relateren, omdat deze kenmerken de (vroeg) ervaringen met zelfcontrole beïnvloed kunnen hebben. Zo zal een promotiefocus vooral startcontrole aanwakkeren omdat het een streven naar winst inhoudt. Een preventiefocus, de neiging om vooral falen te vermijden, zal juist stopcontrole ondersteunen. BIS, een persoonlijke gevoeligheid voor mogelijke straf, zal stopcontrole vergemakkelijken en startcontrole juist bemoeilijken; voor BAS geldt het omgekeerde. In dit hoofdstuk wordt tevens duidelijk gemaakt - en aangetoond - dat consciëntieusheid en impulsiviteit, constructen zijn die verschillen van zelfcontrole, hoezeer ze er soms ook op lijken. Ook is de verwachting bevestigd dat stopcontrole sterker met

impulsiviteit samenhangt (negatief) dan startcontrole, terwijl startcontrole juist een sterkere relatie heeft met consciëntieusheid (positief).

In hoofdstuk 4 wordt het onderscheid tussen stop- en startcontrole getoetst in een werkende populatie. Wederom is eerst een pilotstudy gedaan om ook voor deze populatie vast te stellen of zelfcontrole iets anders is dan consciëntieusheid en of de nieuwe vragenlijst ook hier valide is. Er volgen twee studies: een online-vragenlijst studie met werknemers uit alle delen van Nederland en een veldstudie bij een verzekeringsbedrijf in Rotterdam. Beide studies hebben enerzijds het doel om aan te tonen dat het onderscheid ook valide en nuttig is in andere populaties dan studenten en anderzijds om meer verschillende gedragssuitkomsten van stop- en startcontrole vast te stellen. De relaties met verschillende subcategorieën van contextuele werkprestaties is onderzocht. De verwachting was dat stopcontrole negatief gerelateerd zou zijn aan ‘Counterproductive Work Behavior’ (CWB), gedrag dat schadelijk kan zijn voor het bedrijf en de collega’s, en dat startcontrole positief gerelateerd zou zijn aan ‘Proactive coping’, het aanpakken van mogelijke obstakels voordat ze ontstaan, persoonlijk initiatief, en ‘Organizational Citizenship Behavior’ (OCB), gedrag dat niet direct nuttig is voor het bedrijf maar indirect wel bijdraagt aan het functioneren ervan.

In hoofdstuk 5 wordt het effect van de zelfevaluatie op zelfcontrole over tijd onderzocht bij jongeren in een jeugdzorgplus instelling. In dit longitudinale onderzoek was de verwachting dat een hoog zelfbeeld de stop- en startcontrole zou doen toenemen. Tevens werd verwacht dat beide vormen van zelfcontrole een positief effect op de prestaties van jongeren zouden hebben en daarmee ook op de beoordelingen die zij van hun begeleiders ontvingen. De effecten van stop- en startcontrole zijn hierbij opgesplitst in specifieke beoordelingen door de begeleiders van positief en negatief gedrag. Ook in dit onderzoek is het van belang dat het onderscheid in een andere populatie wordt getoetst.

Samenvattend zijn de onderzoeken in deze vier hoofdstukken in staat gebleken om een antwoord te geven op de onderzoeksvragen. De resultaten van de verschillende studies worden hieronder per onderzoeksvraag behandeld, waarbij tevens terugverwezen wordt naar de afzonderlijke hoofdstukken en studies.

Bevindingen

Kunnen stop- en startcontrole empirisch worden onderscheiden?

De stop- en startcontrole schalen die in hoofdstuk 2 zijn vastgesteld zijn getest in drie verschillende populaties: studenten (hoofdstuk 2 en 3), werkende volwassenen (hoofdstuk 4) en jongeren in een jeugdzorgplus instelling (hoofdstuk 5). In alledrie de populaties zijn de scores geanalyseerd. De factoranalyses tonen twee aparte factoren, die de afzonderlijke constructen stopcontrole en startcontrole representeren. Deze factor structuur, twee

grotendeels onafhankelijke schalen, past telkens beter bij de gevonden resultaten dan de één-factor structuur die algemene zelfcontrole representeert.

Hoewel de exacte factorlading van de individuele items in de schalen ietwat verschillen tussen de populaties, hebben alle items een significante factorlading bij alle studies, met uitzondering van één item bij werkende volwassenen (*Ik houd me aan regels ook al vind ik ze onredelijk*, zie hoofdstuk 4). Dit laat zien dat de intentie om items te selecteren die zelfcontrole kunnen meten in verschillende populaties, grotendeels succesvol is geweest. De schalen kunnen echter nog wel verbeterd worden, zeker als ze vaker in een werksetting gebruikt zullen worden.

In hoofdstuk 3 zijn de uitkomsten van de stop- en startcontroleschalen vergeleken met een andere vragenlijst, die de vergelijkbare constructen “inhibitory control” en “initiatory control” (De Ridder et al., 2011) meet. Getoond wordt dat de resultaten zeer sterk overeen komen. In alle studies zijn stop- en startcontrole gemiddeld sterk en positief gecorreleerd (met r 's variërend van .17 tot .45). Deze relatie is zoals verwacht op basis van het theoretisch onderscheid. Hoewel stop- en startcontrole verschillende constructen zijn, zijn er waarschijnlijk effecten die zelfcontrole als geheel beïnvloeden en daarmee dus ook stop- en startcontrole. Bijvoorbeeld de neiging van een individu om zich op lange termijnuitkomsten te richten, zal zowel de capaciteit voor stopcontrole als de capaciteit voor startcontrole verhogen.

Over het geheel genomen tonen de resultaten van de verschillende onderzoeken dat stop- en startcontrole onderscheiden kunnen worden met behulp van een vragenlijst. De eerste onderzoeksvraag kan dus bevestigend beantwoord worden. Stop- en startcontrole vertegenwoordigen verschillende vormen van zelfcontrole en het is mogelijk om beide vormen afzonderlijk te meten.

Zijn stop- en startcontrole verschillend gerelateerd aan belangrijke uitkomsten?

Zodra het mogelijk was om stop- en startcontrole afzonderlijk te meten, was het zaak om te onderzoeken of stop- en startcontrole ook apart gedrag kunnen voorspellen en of deze relaties met uitkomsten verschillend zijn voor beide vormen van zelfcontrole. Deze bevindingen zouden niet alleen het bestaan van het onderscheid bevestigen maar ook het nut ervan aantonen. Twee afzonderlijke stappen zijn genomen om de tweede onderzoeksvraag te beantwoorden. Eerst zijn gedragingen geïdentificeerd waarvan bekend is dat ze gerelateerd zijn aan algemene zelfcontrole én waarvan op basis van de voorgestelde stop- en startcontroletheorie verwacht kan worden dat deze relatie slechts geldt voor één van de twee vormen van zelfcontrole. Bijvoorbeeld, in hoofdstuk 2 zijn het drinken van alcohol, roken, studeren en sporten geselecteerd als gedrag dat ofwel met stopcontrole, danwel met startcontrole samenhangt. Zodra aangetoond werd dat stop- en startcontrole verschillende

relaties vertonen met deze gedragingen, is overgegaan op de tweede stap: het onderzoeken van variabelen die niet eerder met zelfcontrole capaciteit zijn verbonden, gebaseerd op het theoretische onderscheid.

In hoofdstuk 2 is aangetoond dat alcohol drinken, roken, studeren en sporten gedragingen zijn die uniek samenhangen met ofwel stopcontrole danwel startcontrole. Stopcontrole is negatief gerelateerd aan drinken en roken, startcontrole heeft geen relatie met deze gedragingen. Startcontrole is positief gerelateerd aan studeren en sporten, stopcontrole heeft geen relatie met deze gedragingen. Deze uitkomsten passen bij de eerste stap; stop- en startcontrole kunnen afzonderlijk en uniek gerelateerd worden aan bekende zelfcontrole uitkomsten.

De tweede stap is uitgevoerd in hoofdstuk 4 en 5. In hoofdstuk 4 wordt de relatie tussen stop- en startcontrole en werkgerelateerde uitkomsten onderzocht. De resultaten laten zien dat stop- en startcontrole beide negatief gerelateerd zijn aan CWB en dat alleen startcontrole positief gerelateerd is aan 'Proactive coping', persoonlijk initiatief, en OCB, zoals verwacht. In hoofdstuk 5 wordt gekeken naar de relatie tussen gedrag en de beoordeling daarvan in een jeugdzorgplus instelling. Startcontrole blijkt positief gerelateerd aan gedrag dat men over het algemeen als wenselijk beschouwd en stopcontrole is dat niet. Hoewel hoofdstuk 4 en 5 geen relaties tonen die uniek zijn voor stopcontrole, tonen ze wel het bestaan van verschillende relaties van startcontrole met gedrag, relaties die niet bestaan voor stopcontrole. Hiermee wordt nogmaals duidelijk dat stop- en startcontrole verschillende relaties hebben met gedrag wat nieuwe inzichten biedt voor zelfcontrole in het algemeen.

Gezamenlijk laten deze bevindingen zien dat er verschillende uitkomsten zijn voor stop- en startcontrole, wat positief antwoord geeft op de tweede onderzoeksvraag. De bevindingen zijn afkomstig uit verschillende settings, zoals gezondheid en werk, hetgeen het nut en de generaliseerbaarheid van het onderscheid tussen stop- en startcontrole onderschrijft voor verschillende velden binnen psychologisch onderzoek. Tenslotte bevestigen deze bevindingen de validiteit van het onderscheid tussen stopcontrole en startcontrole.

Zijn de capaciteiten voor stop- en startcontrole verschillend gerelateerd aan andere persoonlijkheidskenmerken?

In hoofdstuk 3 wordt een nomologisch net gepresenteerd voor zelfcontrole, gebaseerd op het theoretische onderscheid tussen stop- en startcontrole. In dit hoofdstuk wordt getoond dat stopcontrole positief gerelateerd is aan BIS en negatief aan BAS en impulsiviteit. Startcontrole is negatief gerelateerd aan BIS en niet gerelateerd aan BAS. Ook is de negatieve relatie tussen startcontrole en BIS veel kleiner dan die tussen stopcontrole en BIS. Deze bevindingen zijn zoals verwacht. In hoofdstuk 5 wordt zelfevaluatie onderzocht als predictor van zelfcontrole. Er is een positieve relatie gevonden tussen de zelfevaluatie van jongeren in een jeugdzorgplus instelling en hun startcontrole over tijd, maar

niet tussen de zelfevaluatie en hun stopcontrole. Het feit dat er een predictor voor startcontrole kan worden aangetoond, biedt mogelijkheden voor verder onderzoek naar antecedenten van zelfcontrole.

Tot slot kan ook de derde onderzoeksvraag positief worden beantwoord. Samen met de antwoorden op de eerste en tweede onderzoeksvraag geeft dit voldoende basis voor het beantwoorden van de overkoepelende vraag van dit proefschrift. Het onderscheid tussen stop- en startcontrole is valide en nuttig.

Discussie

Het onderscheid tussen het onderdrukken van ongewenst gedrag en het activeren van gewenst gedrag dat in dit proefschrift is onderzocht, kan worden bevestigd. Dit onderscheid is nuttig voor zowel verder onderzoek als de praktijk. De meest duidelijke implicatie van dit onderzoek is dat het hebben van een hoge capaciteit om gedrag te stoppen, niet direct een hoge capaciteit om gedrag te initiëren impliceert. Ook al hebben stop- en startcontrole een gemiddelde correlatie, ze zijn verschillend en mensen kunnen met beide zelfcontrolevormen afzonderlijk moeite of succes hebben.

Het onderscheid dat naar voren is gebracht past goed in de theoretische kennis van het zelfcontroleproces (Carver, 2005; Metcalfe & Mischel, 1999). Ook bieden de distinctie tussen stop- en startcontrole en hun definities aanknopingspunten om deze theorieën uit te breiden. De combinatie van kennis betreffende het reflexieve en het reflectieve systeem samen met de distinctie tussen stop- en startcontrole kan tot interessante inzichten leiden. Termen als ‘effortful action’, ‘effortful restraint’, ‘impulsive approach’ en ‘reflexive inhibition’ (Carver et al., 2008) bijvoorbeeld kunnen in onderzoek gebruikt worden om de kennis van de verschillende krachten die ons gedrag vormgeven verder uit te breiden. Een ander voorbeeld waarbij de distinctie van betekenis kan zijn is het onderzoek naar procrastinatie, dat al eerder verbonden is aan controle processen (e.g., Blunt & Pychyl, 2005; Steel, 2007). Het kan zeer nuttig blijken om afzonderlijk te kijken naar procrastinatie als het niet beginnen aan een taak en procrastinatie als het niet kunnen tegenhouden van onnodige andere activiteiten. Om hun gedrag beter te kunnen sturen zou het voor individuen al van praktisch nut kunnen zijn om te weten met welke vorm van procrastinatie zij de meeste moeite hebben.

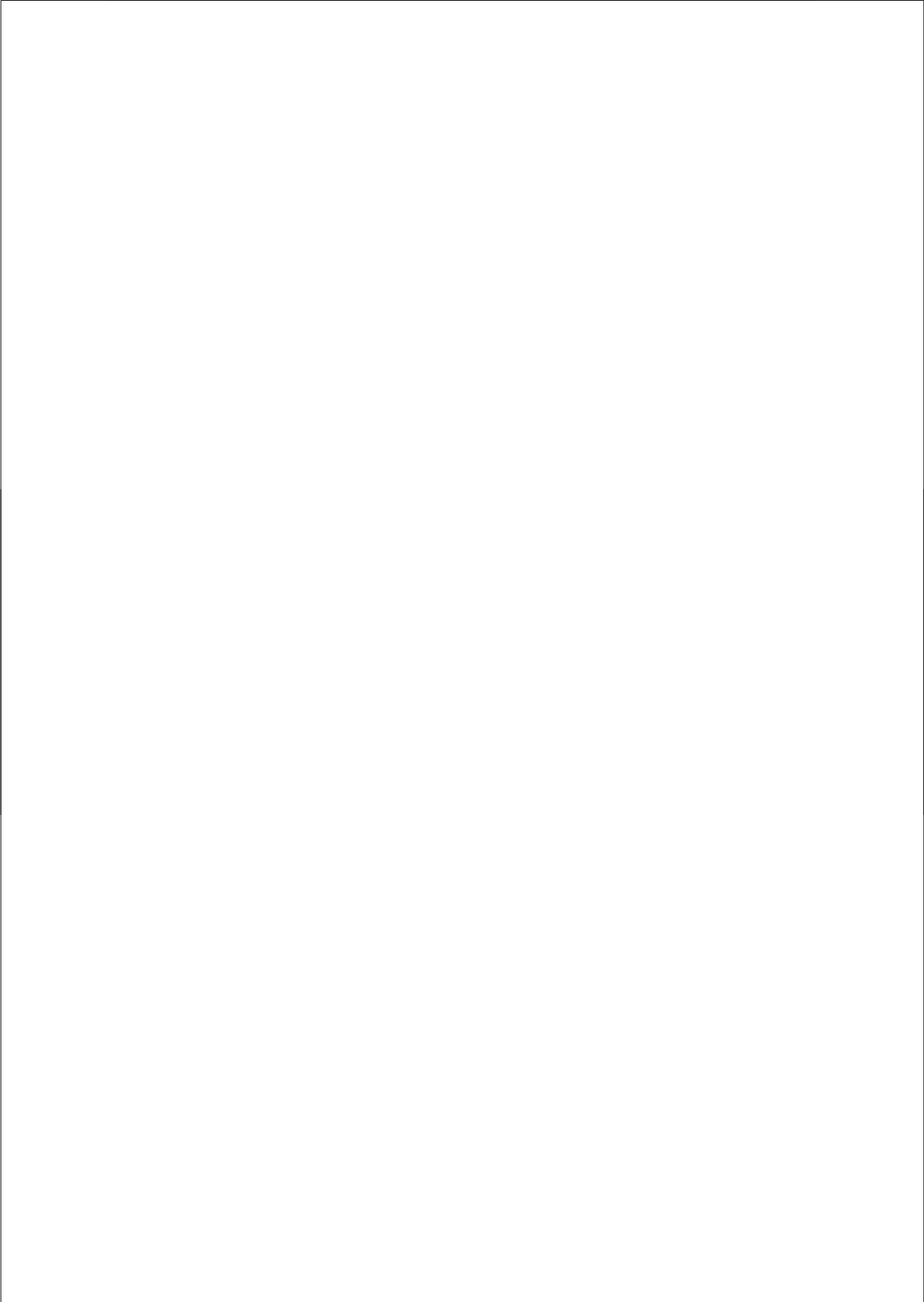
Betreffende de oorsprong of de psychologische basis van zelfcontrole is nog veel onbekend. Het zou kunnen zijn dat er, net als bij BIS en BAS (Boksem, Tops, Wester, Meijman, & Lorist, 2006), biologische en neurologische verklaringen te vinden zijn voor de verschillen in zelfcontrolecapaciteit tussen personen. In hoofdstuk 3 wordt juist naar voren gebracht dat vroege ervaringen, leermomenten en modeleergedrag een belangrijke rol kunnen spelen. Er is meer onderzoek nodig om de oorsprong en achtergronden van stop- en startcontrole te achterhalen. Dit zal belangrijk zijn voor het mogelijk verhogen van de zelfcontrolecapaciteit.

Toekomstig onderzoek zou zich kunnen richten op parameters die verder distincties binnen zelfcontrole mogelijk maken en op raakvlakken van zelfcontrole met andere persoonlijkheidskenmerken. In dit proefschrift zijn consciëntieusheid en impulsiviteit aan de orde gekomen. De overlap en verschillen met deze constructen en stop- en startcontrole geven waardevolle kennis voor het verder ontwikkelen van het zelfcontroleconstruct. Het nomologisch net dat in hoofdstuk 3 is gepresenteerd geeft al veel informatie over de karakteristieken van zelfcontrole. Andere constructen van mogelijk belang zijn intrinsieke en extrinsieke motivatie, het stellen van doelen en het ontvangen van feedback. Deze constructen lenen zich ook goed voor labonderzoek, bijvoorbeeld met gebruik van een ‘cold-pressor task’ als een maat voor zelfcontrole. Tot slot zou zelfcontrole nog onderzocht kunnen worden in verschillende gebieden zoals onderwijs en sport, waarbij het onderscheid tussen stop- en startcontrole van toegevoegde waarde kan zijn.

Conclusie

Het theoretisch onderscheid tussen stopcontrole en startcontrole dat in dit proefschrift is gepresenteerd, is bewezen valide en nuttig te zijn. Het is mogelijk om de twee vormen van zelfcontrole apart te meten met behulp van een vragenlijst en er zijn aantoonbare verschillen gevonden in uitkomsten en antecedenten. Het is vastgesteld dat het door inzet controleren van gedrag teneinde het te stoppen, wezenlijk anders is dan het door inzet controleren van gedrag teneinde het te initiëren. Deze kennis heeft de zelfcontroletheorie uitgebreid en biedt aanknopingspunten voor meer specifieke voorspellingen betreffende bekende zelfcontrole effecten. Daarnaast kan het onderscheid leiden tot nieuwe voorspellingen, ook wat betreft gedragingen die niet eerder in combinatie met zelfcontrole zijn onderzocht. Als zodanig is het onderscheid tussen stopcontrole en startcontrole een waardevolle toevoeging in het huidige en toekomstige onderzoek naar het menselijk functioneren en de mogelijkheid om ons eigen gedrag te sturen.

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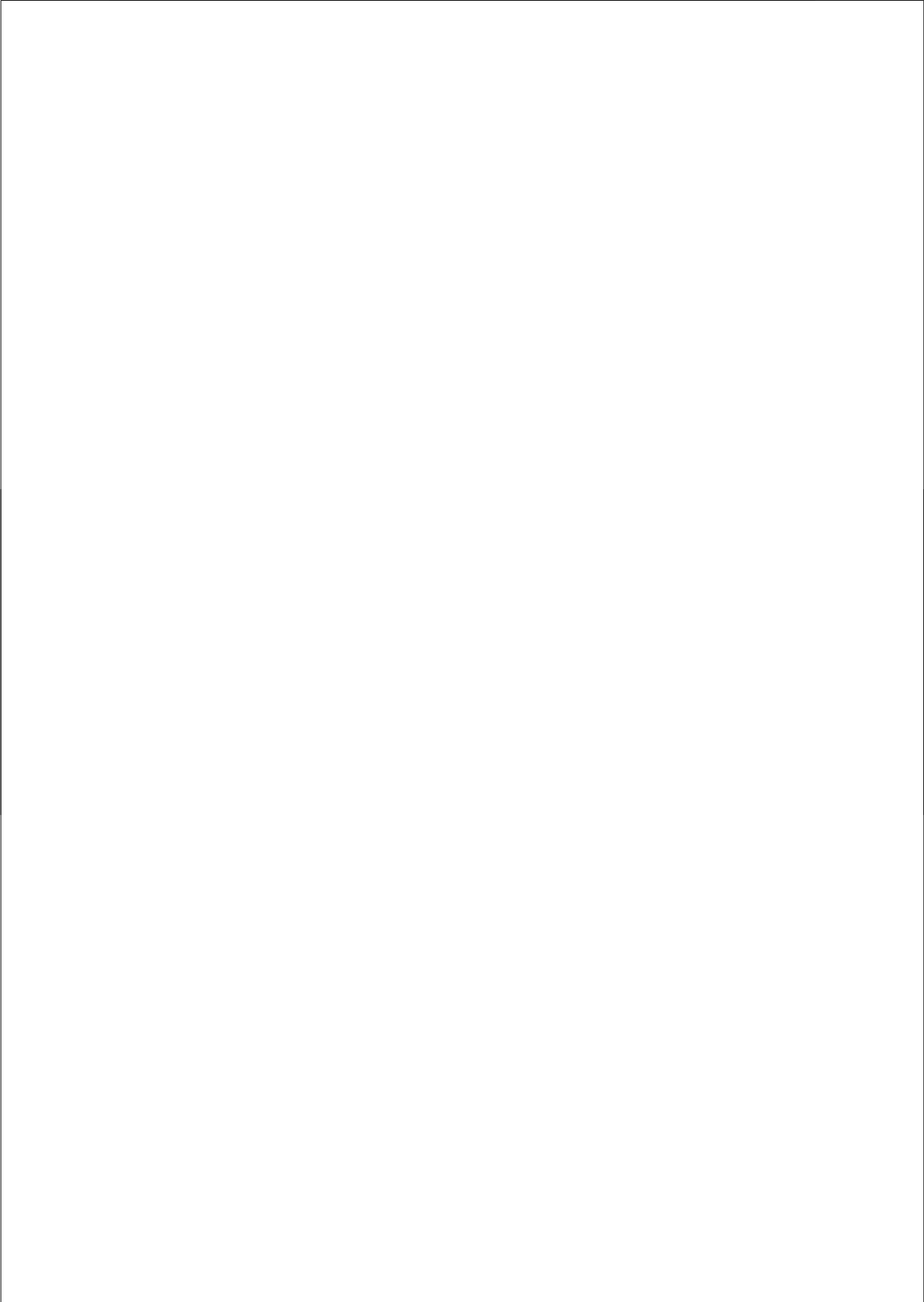
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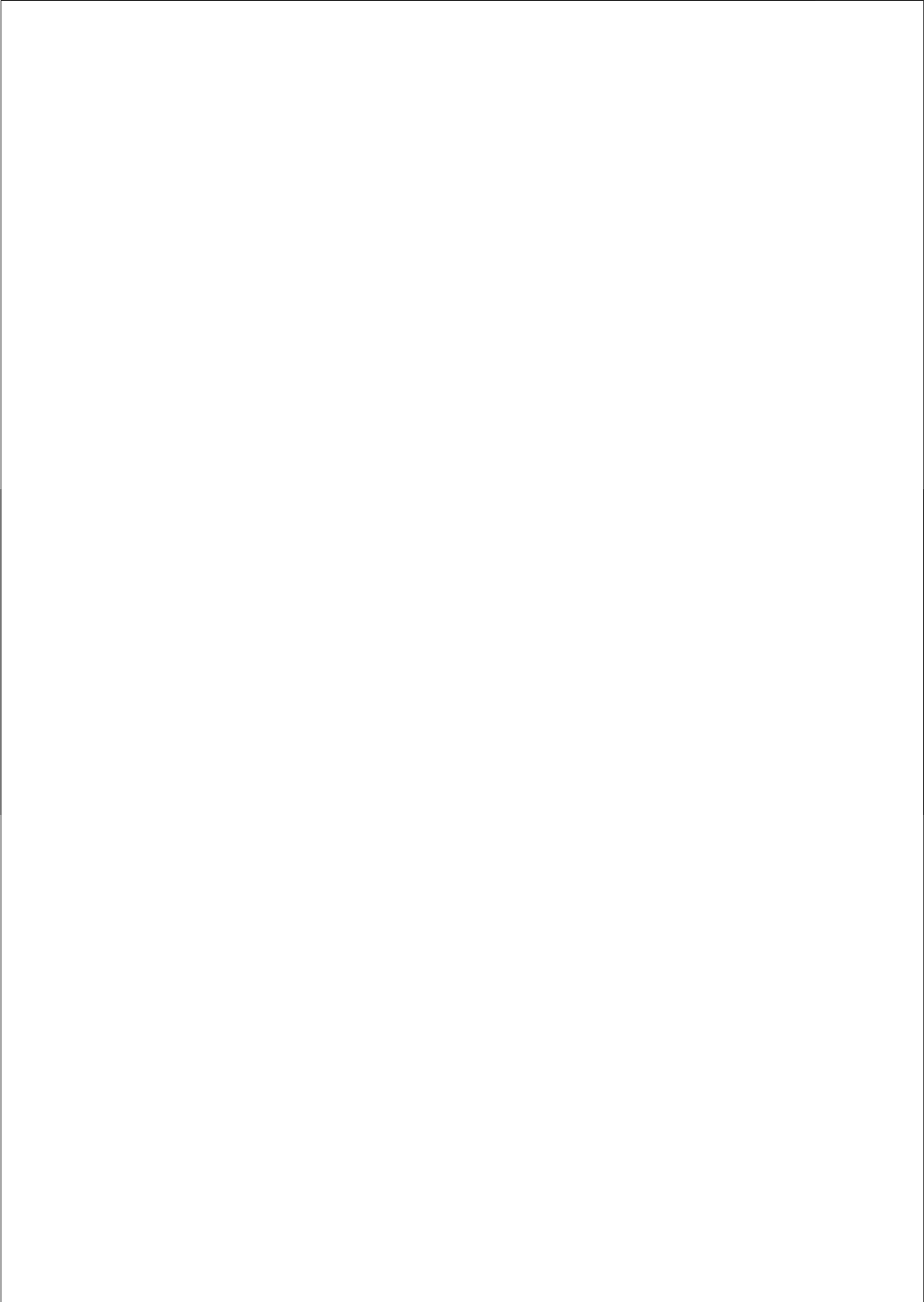
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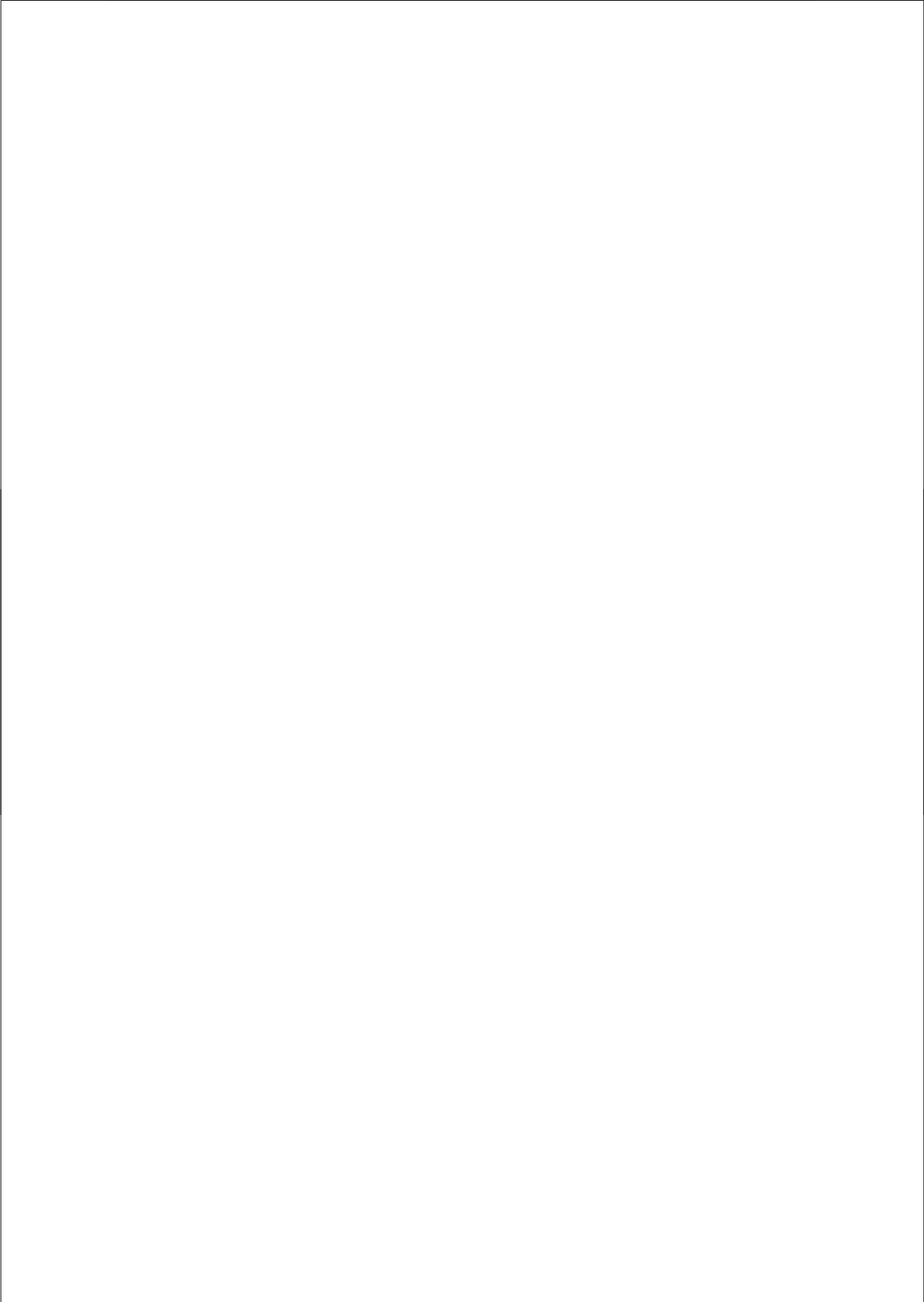
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Benjamin

Curriculum vitae



Benjamin de Boer was born on April 20th, 1983, in Eindhoven, the Netherlands. In 2001 he completed his secondary education at the Lorentz-Casimir Lyceum. In that same year he started his study of psychology at the University of Amsterdam. For his bachelor's degree he also spent a semester studying both psychology and philosophy at Hofstra University in Hempstead, New York. He received his master's degree in industrial and organizational psychology from the University of Amsterdam in 2007. The titles of his bachelor's thesis, 'The psychological contract and organizational citizenship behavior' and master's thesis, 'Mental set in argument generation and selection' reflect his areas of interest in psychology: cooperation, creativity and control. He continued this interest at the Erasmus University Rotterdam, where he started working as a PhD candidate in April of 2007. The results of the PhD project, which was co-financed by WorkWise, are reported in the present dissertation. Besides his research activities he enjoyed supervising bachelor's and master's theses, but mostly teaching statistics. At the time of this writing Benjamin is part of the National ThinkTank 2011.

