It’s the means that beat procrastination : a dynamic model centering on the role of process versus outcome focus

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It’s the Means that Beat Procrastination:

A Dynamic Model

Centering on the Role of Process versus Outcome Focus

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ABSTRACT

This thesis applies prior findings on beneficial effects of cognitive goal representations (i.e., goal focus) for self-regulation to the phenomenon of procrastination. In a multi-method approach we introduce and investigate a dynamic model on the role of goal focus for procrastination, and make a contribution to the assessment of procrastination. Three main questions guided this research: 1) Does the cognitive representation of a goal in terms of its means (process focus) or its outcome (outcome focus) influence procrastination and how do well-known antecedents of procrastination moderate this relationship (Part I)? 2) How do self-report measured procrastination, actual behavior and affective well-being interact over time (Part II)? and 3) Do the main assumptions of the dynamic model, i.e., that process focus helps reducing procrastination, hold empirically and what are the underlying mechanisms (Part III)?

Taking a motivational perspective, Part I presents a model that hypothesizes that focusing on the means of goal pursuit (process focus) reduces procrastination, especially for those high in fear of failure. For those perceiving the means as highly aversive an outcome focus should be more beneficial. The adaptiveness of goal focus with regard to procrastination is hypothesized to change over the course of an action. In Part II we found in a short-term longitudinal study with $N = 162$ students, that self-report state procrastination is (a) moderately positively correlated with a behavioral measure of procrastination, and that it (b) is a better predictor of one of the central aspects of procrastination, namely affective well-being. Part III comprises two studies that investigate the dynamic model of procrastination presented in Part I. In a cross-sectional scenario study with $N = 92$ and a short-term longitudinal study with $N = 50$, both using self-report measures, we found that process focus is negatively related with procrastination, indicating that cognitive goal representations, i.e., goal focus, make a contribution to the prediction of procrastination.

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Abstract

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INTRODUCTION

Gazing out of the window not doing anything even though writing a paper that is due soon is the priority at the moment – most of us have already experienced such situations of procrastination. One of the riddles of human nature is the question why we often do not pursue a goal and do not engage in an activity even though the goal is important to us and we know it would be best for us to get started (Sansone & Thoman, 2005). Procrastination, the tendency to delay the initiation or completion of pursuing a goal to the point of discomfort (Howell & Watson, 2007; Solomon & Rothblum, 1984), is widespread, especially in the academic context. The majority of those who procrastinate wish to stop this behavior (Steel, 2007), as the successful pursuit of goals, providing direction and meaning, is an essential part in most people’s life (Emmons, 1996). However, people differ in the way they represent the goals they pursue.

This thesis builds a motivational framework that describes how the cognitive representation of a goal influences procrastination and successful goal pursuit. More specifically, it centers around the question how the focus on either the means or the outcome of a goal affects procrastination.

Prior research has investigated procrastination in relation to characteristics of the person such as fear of failure, self efficacy, and personality traits (Haycock, McCarthy, & Skay, 1998; Solomon & Rothblum, 1984; van Eerde, 2003), or situational factors such as the of task characteristics and the role of deadlines (Ariely & Wertenbroch, 2002; Blunt & Pychyl, 2005). This dissertation strives to expand prior research by adding a motivational perspective regarding the role of cognitive goal aspects on procrastination, an aspect that so far has not received much attention (for exceptions see van Eerde, 2000). More specifically, taking into account main antecedents of procrastination, we investigate, if procrastination differs when people focus on how versus why they pursue a goal (i.e., process vs. outcome focus). Based on Kruglanski’s (1996) definition of goals comprising means that are tied to certain ends, means can be described as more concrete representations of how to pursue a goal whereas ends can be described as more abstract. Freund, Hennecke, and Mustafic (2012) explain that people highlight either the
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process or the outcome of goal pursuit, and that the focus that is currently in the foreground may vary across the course of an action. As a consequence, the adaptivity of which focus is more beneficial under certain circumstances is likely to be varying as well. In research different arguments can be found to the question which focus is more adaptive. McCrea, Liberman, Trope, and Sherman (2008), for instance, found that when a goal is represented more concrete, which would resemble a process focus, the goal is perceived as more urgent, hence, people procrastinate less. In other words, a person that represents clearly what to do when will engage in writing an abstract for a conference presentation in a more timely manner instead of delaying it to the last minute. Carver and Scheier (1998) however would argue that focusing on the outcome and comparing the current with the desired state motivates a person to move towards the goal. In other words, a person who keeps her eyes on the prize (Houser-Marko & Sheldon, 2008), will be less distracted by alternative activities when intending to finish writing a paper, hence, will procrastinate less. In order to make predictions of the adaptivity of goal focus for procrastination this thesis investigates the interplay between goal focus and well-known antecedents of procrastination, such as fear of failure and task aversiveness. As prior research suggests that lower levels of procrastination also affect outcomes such as well-being, stress, task completion rate and performance (for a summary, see Steel, 2007), we consider the adaptivity of goal focus with regard to these outcomes also.

Solomon and Rothblum (1984) state, that “(...) procrastination involves a complex interaction of behavioral, cognitive, and affective components” (p. 509). This thesis addresses all three components. Part I introduces a dynamic model of procrastination that asks how cognitive characteristics of goals, i.e., goal focus, influence procrastination. Part II examines the interplay between self-report measured procrastination, actual behavior and affective well-being over time. Part III empirically investigates the role of goal focus on procrastination taking into account potential moderators. In the following paragraph I will briefly outline the content of the three Parts.
Introduction

Part I: How to Beat Procrastination – The Role of Goal Focus

Taking a motivational perspective in Part I we introduce a dynamic model that centers on the role of goal focus for procrastination. The model is based on the idea that the cognitive focus on a goal impacts the degree to which a person procrastinates. The main hypothesis of the model is that focusing on the process of goal pursuit is negatively related to procrastination. Based on prior research, it argues that characteristics of process focus such as concreteness, positive affect, flexibility after failure and not drawing attention to the far-away outcome are associated with lower levels of procrastination. Furthermore the model describes how main antecedents of procrastination function as moderators of the relationship between process focus and procrastination, and how the adaptiveness of process focus, as a consequence, might vary accordingly. Part I furthermore discusses how the adaptivity of process and outcome focus with regard to procrastination changes over the course of an action in the presence of a deadline. Consequences of our model are discussed regarding the dynamics of procrastination in the school and university context. Using a theoretical approach, Part I discusses the advantages of integrating goal focus into procrastination research and offers practical implications. Moreover, we highlight that the model can be transferred to other life domains such as the health and work context.

Part II: Delay or Procrastination – A Comparison of Self-Report and Behavioral Measures of Procrastination and Their Impact on Well-Being

In contrast to the rather broad perspective of procrastination in a motivational framework of Part I, in Part II we narrow our perspective by focusing on the construct of procrastination and its measurement. In this thesis we intend to empirically test the model presented in Part I, hence we asked, how well self-report measures of procrastination reflect actual behavior. When assessing procrastination most studies work with self-report measures that are often criticized for being influenced or distorted by several biases such as social
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desirability. Previous research found moderate positive correlations between the self-report procrastination and actual behavior, but did not measure procrastination multiple times in short-term longitudinal studies (i.e., Solomon & Rothblum, 1984). The first aim of this research was to replicate previous findings on self-reported versus actual behavior and expand the current literature by assessing both measures over time.

The second aim of Part II is to validate self-report procrastination by stressing its relation to negative affect. The phenomenon of procrastination is not a new one, however, it has not always been perceived as something negative. In ancient Rome it was considered as a virtue to be able to withhold taking action until all information needed to make the right decision how to act was gathered (Helmke & Schrader, 2000). Even though research today has mostly agreed upon procrastination being harmful, or at least problematic (Steel, 2007), there is some literature about positive forms of procrastination, labeled “active procrastination” or strategic delay (Chu & Choi, 2005; Corkin, Yu, & Lindt, 2011). Klingsieck (2013) offers a framework that separates procrastination from forms related to delay. In this thesis, we characterize procrastination by (1) delay, (2) negative affect or guilt, and it can (3) impact different phases of an action (i.e., its initiation or completion). In Part II we intend to validate self-report measured procrastination by showing that it is a better predictor of affective well-being than the behavioral measure of procrastination, which mainly reflects delay.

Part III: Process Focus Helps Against Procrastination in the Academic Context

Part III empirically addresses the assumptions of the model presented in Part I. The main question of Part III was, if the cognitive representation of a goal in terms of its means or its outcome influences procrastination. We study this question in the academic context where the phenomenon of procrastination is highly prevalent. However, we assume that the model can be used in other contexts as well.
The questions guiding us in the two studies of Part III are (a) is process focus helpful against procrastination in a hypothetical context and in a real life situation, (b) are there moderating effects for this relationship, (c) does the main hypothesis of the model hold over time?

Study 1, a cross-sectional study, employs newly developed typical academic scenarios to hypothetically investigate the relation between process focus and procrastination. The use of different scenarios allows us to find out if the main assumptions of the model hold in different academic situations. If we do not find differences between the scenarios this can be interpreted as an indicator that the model assumptions can be generalized across different academic situations. Study 2 aims at investigating the relation between process focus and procrastination over time. Here, we address the question in a real life situation with students studying for an exam. Using the self-report procrastination instrument introduced in Part II, we assess procrastination, process focus and the possible moderators, fear of failure and task aversiveness multiple times over a period of five weeks. We anticipate, that the model holds over time and expect to replicate previous findings by Ariely and Wertenbroch (2002) who found that procrastination decreased with an approaching deadline. Of particular interest is the question if we find moderating effects for fear of failure and task aversiveness. Will students who focus on the process and are high in fear of failure especially benefit from a process focus? Is process focus detrimental when students perceive the means as highly aversive? Another question of interest is how subjective well-being develops in relation with procrastination.
PART I:
HOW TO BEAT PROCRASTINATION – THE ROLE OF GOAL FOCUS

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Abstract

Procrastination, defined as the subjectively aversive inability to initiate or complete the pursuit of a given goal, is a common phenomenon in academic contexts. This theoretical paper presents a dynamic model that centers on the role of goal focus in influencing procrastination during goal pursuit. Our central hypothesis is that focusing on the means of goal pursuit (i.e., adopting a process focus) reduces procrastination, particularly when fear of failure is high. Focusing on the means should decrease the salience of performance outcomes and thereby reduce fear of failure. This, in turn, should facilitate the initiation and maintenance of goal pursuit. In contrast, when means are perceived as unpleasant (high task aversiveness), focusing more on the outcome of goal pursuit (i.e., adopting an outcome focus) should reduce procrastination by directing attention away from the means while highlighting the importance of goal achievement. Furthermore, the model takes account of dynamic contextual factors, particularly the distance to a given deadline.

Keywords: Procrastination, Goal focus, Self-regulation, Fear of failure, Motivation
Introduction

Imagine the predicament of a student facing the typical course requirement of passing the final exam. She knows she has to start preparing fairly soon but, for some reason, she just cannot get started. She tires quickly when trying to read the textbook and gets distracted by other activities such as long-neglected household chores or updating her Facebook page. She feels the pressure to start studying, but simply cannot bring herself to do so. In other words, she is procrastinating.

Procrastination is defined as the tendency to delay the initiation or completion of goal pursuit to the point of discomfort (Howell & Watson, 2007; Solomon & Rothblum, 1984). Procrastination is widespread and, as Schouwenburg and Groenewoud (2001, p. 238) put it: “a certain amount of procrastination belongs to normal behavior.” Thus, most people procrastinate at some point in their lives and do so more in some contexts than in others. Because of the high incidence of procrastination in the academic context (Helmke & Schrader, 2000), the present paper examines procrastination in the academic domain.

Why should we care about procrastination? The most compelling reason is probably that procrastination is associated with a number of negative outcomes such as lower subjective and objective task performance and completion (e.g., Beswick, Rothblum, & Mann, 1988; Steel, Brothen, & Wambach, 2001; Tice & Baumeister, 1997; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). Meta-analyses demonstrate a negative relationship between procrastination and grades (Steel, 2007; van Eerde, 2003). Although the association between procrastination and objective performance is of small to moderate size, subjective evaluations of performance might be lowered by procrastination, which, in turn, might affect self-efficacy and fear of failure. This could result in a vicious circle by increasing future procrastination (e.g., Helmke & Schrader, 2000). With regard to affective consequences, Steel et al. (2001) reported a significant correlation between self-reported procrastination and negative affect. Moreover, the definition of procrastination stresses that a delay of action constitutes a case of procrastination only if it is
accompanied by emotional discomfort. Students know that they are worse off by not pursuing the goal as planned but they still cannot bring themselves to do so. This knowledge leads to emotional discomfort and negative affect (Steel, 2007; Wolters, 2003). Schraw, Wadkins and Olafson (2007) found that students experienced fatigue, stress, guilt, anxiety, and a lower quality of life as a result of procrastination (see also Beck, Koons, & Milgrim, 2000; Sirois, Melia-Gordon, & Pychyl, 2003; Tice & Baumeister, 1997).

How can one overcome procrastination? This theoretical paper presents a motivational framework centering on the role of goal focus (process vs. outcome focus) for procrastination. More specifically, we investigate whether it is more beneficial for overcoming procrastination to focus on the means of goal pursuit (e.g., review lecture notes, discuss questions with fellow students), or to focus on the outcome (e.g., think about the importance and consequences of passing the final exam) in order to initiate and maintain goal-relevant action. We present a dynamic model that outlines the change in adaptiveness of process and outcome focus for overcoming procrastination over the course of goal pursuit. Although our model is proposed to hold across different goal domains, in this article we focus primarily on the academic context, as procrastination is a very prevalent phenomenon in this domain.

Previous research on procrastination has identified fear of failure, task aversiveness, and self-efficacy as central predictors of procrastination (e.g., van Eerde, 2000; Wolters, 2003), and has focused on individual differences in these variables for predicting procrastination (Ferrari, Johnson, & McCown, 1995; Helmke & Schrader, 2000; van Eerde, 2003). Less is known about the processes that link individual differences to procrastination and their interaction with contextual variables such as task characteristics (van Eerde, 2000) or temporal distance to the goal (Moon & Illingworth, 2005). The central aim of this theoretical paper is to address this gap in the literature by proposing a dynamic model that relates procrastination to goal focus and includes antecedents of procrastination affecting this relationship as well as consequences of procrastination. The model is dynamic in that it considers the development of procrastination and its changes over
time and across contexts. For excellent reviews of current state of the literature on procrastination we refer the reader to Klingsieck (in press), Schouwenburg (1995), van Eerde (2000), or Flett, Blankstein, and Martin (1995).

**Defining Procrastination from a Dynamic Perspective**

The definition of procrastination as the tendency to delay initiation or completion of goal pursuit implies that procrastination can occur in different phases of goal pursuit. Helmke and Schrader (2000; Schraw et al., 2007) integrated procrastination in the academic context into the Rubicon model of action phases by H. Heckhausen (1989). Heckhausen’s model contains four distinct phases: (1) the *pre-decisional phase* (deciding on whether or not to adopt a goal), (2) the *pre-actional phase* (planning goal-relevant action by formulating implementation intentions), (3) the *actional phase* (initiating and maintaining goal-relevant action), and, after having reached the goal, (4) the *post-actional phase* (evaluating the means and the results of the action). Helmke and Schrader assume that procrastination is the result of failures in self-regulatory processes (see Table 1).

*Table 1.*


<table>
<thead>
<tr>
<th>Decision</th>
<th>Action initiation</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-decisional phase</td>
<td>Pre-actional phase</td>
<td>Actional phase</td>
</tr>
<tr>
<td>Low self-efficacy beliefs</td>
<td>Inefficient time-management</td>
<td>Lack of control processes</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>strategies</td>
<td>Self-doubt</td>
</tr>
<tr>
<td>Self-handicapping</td>
<td>Fear of failure</td>
<td>Fear of failure</td>
</tr>
<tr>
<td>Poor goal setting</td>
<td>State orientation</td>
<td>Lack of persistence</td>
</tr>
<tr>
<td></td>
<td>Excessive planning</td>
<td>Attractive alternatives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative evaluation process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>has consequences on process</td>
</tr>
</tbody>
</table>
Thus, in the pre-decisional phase, low self-efficacy beliefs, fear of failure, and self-handicapping can undermine learning efforts. Self-efficacy beliefs are people’s beliefs about their capabilities to produce effects (Bandura, 1997). First, these low self-efficacy beliefs may prevent students from evaluating their learning attempts as effective. Second, looming exams may evoke fear of failure and result in delaying the decision to start studying. Third, as a means of protecting their self-esteem, students might postpone the decision to start studying in order to be able to blame a low grade on external factors such as lack of time (i.e., self-handicapping).

The factors contributing to procrastination in the pre-actional and the actional phase are very similar. In the pre-actional phase people plan the “how,” “when,” and “why” of an action. During the actional phase, these plans are implemented and, if necessary, reviewed and revised. Hence, procrastination can be a result of inadequate planning (Schwarzer, 1999).

However, planning is a double-edged sword: Although making concrete plans has been shown to enhance subsequent action implementation (e.g., Gollwitzer & Brandstätter, 1997; Schmitz & Wiese, 1999), making excessive plans can be used as a strategy to delay work on the actual task (Helmke & Schrader, 2000). In the actional phase, procrastination also refers to problems of maintaining goal-relevant actions.

During the course of action, people may interrupt or even stop their goal-relevant activities. Schwarzer (1996) proposes that this might be due to coping doubts. Coping doubts are self-doubts about one’s ability to cope with challenges and setbacks during goal pursuit. Coping doubts can lead to a lack of persistence and an engagement in more pleasant or less difficult alternative activities. According to Frank (1989), the feeling of guilt that usually accompanies procrastination helps to compete with falling for these attractive alternatives. Wanting to stop this feeling might be the reason why students start to reengage in goal pursuit. Difficulties in maintaining goal-relevant actions might also be due to interference through fear of failure. As will be explained in more detail below, we posit that focusing on the means rather than the outcome of goal pursuit might help to overcome fear of failure.
In the post-actional phase, one’s evaluation of the course of goal-relevant actions and their consequences (i.e., goal achievement or failure) as well as a cost-benefit analysis are important for future goal setting and goal pursuit and will thus also influence future procrastination. For instance, if students repeatedly experience a lack of self-efficacy as a consequence of previous procrastination, subsequent goal setting and goal pursuit are likely to be influenced negatively, especially with regard to self-efficacy beliefs, self-esteem, fear of failure, and coping doubts. Taken together, Helmke and Schrader’s model demonstrates which of the key self-regulatory processes might be disturbed when procrastination occurs during goal setting and goal pursuit.

Goal Focus

The definition of procrastination outlined above includes the presence of a goal. However, the literature on procrastination has focused primarily on person characteristics or situational factors. In contrast, the question of which cognitive goal characteristics might be related to procrastination has been largely neglected (for exceptions see e.g., Blunt & Pychyl, 2005). We propose that, in addition to person and situational characteristics, goal-related constructs such as the cognitive representation of goals primarily in terms of the means (process focus) or the outcome (outcome focus) might play an important role for procrastination.

Goals can be conceptualized as cognitive representations linking means to desired ends (e.g., Kruglanski, 1996). In other words, goal representations always comprise both means and ends. These two components of goals, however, are not necessarily equally salient for each given goal and at each given point in time (e.g., Freund, Hennecke, & Riediger, 2010; Freund, Hennecke, & Mustafic, 2012). People might focus primarily on the ends or the outcome of goal pursuit (e.g., to receive a good grade on the final exam) (Sansone & Thoman, 2005), or focus primarily on the means or the process of goal pursuit (e.g., reading a textbook or joining a study group). Process focus denotes a stronger cognitive salience of the “how” or means of goal pursuit (e.g., “How can I get a good grade on the final?”); outcome focus relates to the “why” or
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consequences of goal pursuit (e.g., “Why do I want to get a good grade on the final exam?”) (Pham & Taylor, 1999). Thus, goal focus refers to the relative salience of the outcome compared to the process of goal pursuit. We can imagine the person’s goal focus as beaming a flashlight on either the means or the end of goal pursuit (Freund et al., 2012). Conceptually, then, goal focus constitutes one dimension with the two poles of a predominant focus on the outcome or the process of goal pursuit. A person might have a very balanced representation of a given goal in terms of its means and its consequences, not adopting a focus on either of two goal components. Note, that even if a person might habitually tend to adopt one of the two foci when pursuing a goal, goal focus can change depending on such factors as motivational phase, goal orientation towards change versus stability, or age (Freund et al., 2012). In the next section, we elaborate on the theoretical role of goal focus for procrastination.

A Dynamic Model of Procrastination and Goal Focus

Our model centers on the question which of the two goal foci is more beneficial for the initiation and maintenance of goal-relevant actions, for goal achievement, and for subjective well-being. Research concerning the pursuit of difficult goals such as losing weight or starting with regular exercise points to the adaptiveness of adopting a process focus to maintain goal pursuit over time (Freund & Hennecke, 2012; Freund et al., 2010). Similarly, when preparing for an exam, mentally simulating the process of goal pursuit rather than focusing on the outcome is related to better performance on the exam (Pham & Taylor, 1999). However, studies by Zimmerman and Kitsantas (1997, 1999) suggest that the adaptiveness of goal focus for the acquisition and mastery of skills depends on the learning phase. In line with a dynamic view of

1 There are a number of psychological constructs – most notably intrinsic versus extrinsic motivation (e.g., Deci & Ryan, 2000) and mastery versus performance motivation (e.g., Dweck, Chiu, & Hong, 1995) - that have some conceptual relationship with goal focus. For a detailed elaboration of the differentiation of goal focus from these constructs see Freund et al., 2012.
motivational and action phases, we expect the adaptiveness of process and outcome focus to change over the course of goal pursuit. We will elaborate on the dynamic aspect later.

Let us start with a static “snapshot” of the underlying mechanisms of the relationship between goal focus and procrastination in the actional phase. The main hypothesis of the model is that a process focus is negatively related to procrastination during the non-urgent actional phase (see Figure 1).

![Figure 1. Working model: The relation between procrastination and goal focus during the actional phase.](image)

Picture again the student who wants to start studying for an exam. There are several reasons why a process focus should help to reduce procrastination:

**Concreteness.** First, a process focus provides guidelines for concrete means of action (Carver & Scheier, 1995). McCrea, Liberman, Trope, and Sherman (2008) show that people are less likely to procrastinate when a more concrete cognitive representation of a given task is induced. One explanation for this finding is that more abstract or higher-level construals of a task are related to a greater psychological as well as temporal distance (Trope & Liberman, 2003).
A greater perceived distance might, in turn, induce people to locate the timing for acting on a goal in the distant future. In other words, when students perceive a goal as temporally distant, procrastination is more likely than when students perceive the goal as proximal and requires immediate action. As proposed by construal-level theory (Trope & Liberman, 2010), representations of a goal in the near future lead to a more concrete cognitive construal involving actions (i.e., process focus) rather than outcomes. If a goal is construed more concretely, and it is highly structured, its perceived proximity increases (Liberman, Trope, McCrea, & Sherman, 2007). In other words, a concrete representation of a goal in terms of the required means rather than its outcomes should increase performance and decrease procrastination (Locke & Latham, 2002; McCrea et al., 2008).

When focusing on the present or the immediate future, the context as well as the actions necessary to reach a goal are at the center of attention, making it more likely that a person will engage in action planning and in forming implementation intentions (e.g., Gollwitzer, 1999), which increases the likelihood of action initiation. For example, creating a schedule that specifies what to study when and how should make it easier for a person to actually engage in these behaviors as well as to accurately monitor the learning process. This kind of planning is often regarded as a learning strategy that is negatively related to procrastination (Howell & Buro, 2009; Wolters, 2003).

**Standard of comparison.** An outcome focus provides a clear standard for comparing the current with the desired state. According to Carver and Scheier (1998), this should help to keep goal-relevant actions “on track” and, hence, should be adaptive for goal pursuit and achievement. We do not disagree with this important function of adopting an outcome focus but propose a more differentiated perspective regarding the relationship between outcome focus and procrastination: An outcome focus and a comparison of the current and desired state might come at an emotional and motivational cost when the discrepancy between the current and desired state is large. This is particularly true in the early phases of goal pursuit, for example
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when a student experiences the difference between not having started to study for an exam as the current state and having a good command of the knowledge summarized in the textbook as a desired state. Focusing on the desired end state (i.e., adopting an outcome focus) draws attention to the negative discrepancy between the current and the desired state (Freund et al., 2010). This might lead to negative affect, especially when goal progress is slow (Carver & Scheier, 1998).

Negative affect, in turn, might undermine motivation (Custers & Aarts, 2005).

**Affect during goal pursuit.** If pursuing a given goal is associated with negative affect, one needs to be able to delay gratification until the goal is attained (e.g., Mischel & Ayduk, 2004). For instance, for many students, studying for an exam is less pleasant than going out with friends. In addition, partying offers immediate rewards whereas the fruits of studying might lie in the far future. As pointed out by Howell and Watson (2007, p. 168) “procrastinators reveal a tendency toward temporal discounting, wherein the value of distant, large rewards is downplayed relative to more immediately available, smaller rewards.”

In some cases, procrastination may function as a tool for mood repair. Tice and Bratslavsky (2000) showed that, compared to participants in a neutral or positive mood, participants in a sad mood spent less time practicing for an upcoming math test and more time procrastinating by engaging in other activities. In other words, sad participants attempted at repairing their sad mood by engaging in other activities at the expense of working on a less pleasant but more important task (i.e., preparing for an exam).

Focusing on the means of goal pursuit facilitates the planning of the specific steps necessary to achieve the goal and should thereby increase the utility of goal-relevant action by reducing the delay of rewards (Steel & König, 2006). Not surprisingly, then, a study by Freund et al. (2010) showed that focusing on the means rather than the outcome of goal pursuit was positively related to increases in subjective well-being over time. In addition, enjoying the means of goal pursuit (“the way is the goal-attitude”) should reduce procrastination, as it renders the task more pleasurable and hence more likely to be carried out (Harackiewicz, Manderlink, &
Sansone, 1984; Locke & Latham, 2002). We assume that a process focus offers more opportunities for positive reinforcement than an outcome focus if goal pursuit itself is perceived as rewarding.

**Flexibility after failure.** Process focus also offers more opportunities to get back on the wagon after failure (Freund & Hennecke, 2012). More specifically, we propose, that process focus helps to maintain motivation in the face of setbacks such as getting distracted from work. Think again of the students preparing for an exam. As mentioned above, attractive alternatives to studying such as meeting with friends, going to a party, or watching a favorite TV show might lure students away from their desks. Procrastination, a form of giving in to such temptations, might be considered a failure concerning the goal of studying. Adopting a process focus can help mastering such failures during goal pursuit by keeping attention on the means rather than on one’s lack of progress towards the outcome. In fact, Hennecke and Freund (2010) showed that a process focus led to better self-regulation and continued goal pursuit when participants experienced failures and problems during goal pursuit. If students fail in employing a specific means, process focus should increase the likelihood of substituting it with another means instead of procrastinating, thereby offering more flexibility in overcoming obstacles. For example, instead of procrastinating by employing the means of reading a textbook alone at home, the student can replace it by the means of studying in a group together with peers (cf. Kruglanski et al., 2002).

**Moderating conditions and influencing factors for goal focus and procrastination**

Based on previous research, we take a number of moderating factors into account to understand the relationship between goal focus and procrastination. The literature on procrastination agrees that the main antecedents of procrastination are fear of failure, task aversiveness, and low self-efficacy (e.g., Ferrari, 1991; Rothblum, Solomon, & Murakami, 1986; Schraw et al., 2007; Steel, 2007; van Eerde, 2000). As task aversiveness should be more strongly related to the means of goal pursuit, and fear of failure more strongly related to the outcome, we
suggest that the relationship between process focus and procrastination is moderated by task aversiveness and fear of failure (see Figure 1). Furthermore, we include self-efficacy because it refers to the person’s evaluation of the means. We hypothesize that process focus is positively related to self-efficacy.

**Fear of failure and procrastination.** A number of studies have shown that fear of failure is positively related to procrastination (e.g., Haycock, McCarthy, & Skay, 1998; Lay, Edwards, Parker, & Endler, 1989; Solomon & Rothblum, 1984). For example, in a study with a group of college students, Helmke and Schrader (2000) found that trait as well as state procrastination was substantially correlated with state fear of failure (for further findings, see Ferrari & Tice, 2000; Flett, Blankstein, Hewitt, & Koledin, 1992; Vansteenkiste et al., 2009). Hagbin, McCaffrey, and Pychyl (2012) found that the relation between fear of failure and procrastination was positive only for students who perceived their levels of competence as low.

There is some empirical evidence for both causal directions of the relationship between procrastination and fear of failure. On the one hand, procrastination has been found to increase anxiety and depression (Flett, Blankstein, & Martin, 1995; McCown & Johnson, 1991; Milgram & Toubiana, 1999). On the other hand, procrastination can serve as a technique to avoid a fear-inducing stimulus such as studying for a challenging exam (Milgram, Mey-Tal, & Levison, 1998). When one fears the task at hand, procrastinating results in relief from anxiety, which negatively reinforces procrastination behavior (Solomon & Rothblum, 1984). Fear of failure may thus lead to task avoidance (van Eerde, 2000), resulting in a cyclical behavioral pattern in which task avoidance becomes habitual (Brownlow & Reasinger, 2000). Accordingly, Schraw and colleagues (2007) refer to procrastination as a coping strategy.

In general, the empirical evidence suggests a moderate effect size for the impact of fear of failure on procrastination (e.g., Schouwenburg, 1992; van Eerde, 2003; see also Senecal, Koestner, & Vallerand, 1995). In the following, we propose that fear of failure might interact with process focus in models predicting procrastination.
Fear of failure moderates the relationship between process focus and procrastination. We propose that process focus might help to reduce procrastination when fear of failure is high. Outcomes are higher than means in the goal hierarchy (e.g., Austin & Vancouver, 1996; Vallacher & Wegner, 1987). The higher a goal is in the hierarchy, the more likely it is that events threatening goal achievement elicit rumination (Martin & Tesser, 1989). Focusing on the outcome of a goal, such as passing an exam, also makes the possible consequences of failing more accessible and, thereby, intensifies fear of failure. In contrast, focusing on the actions required for passing the exam should bring the means to the foreground and push the possible consequences into the background of attention. By focusing on the means, the goal might seem more manageable. In line with this perspective, Pham and Taylor (1999) showed that adopting a process focus reduced anxiety about failure in students preparing for an exam, which in turn enhanced exam performance. On the basis of these findings, we suggest that process focus in particularly beneficial in reducing procrastination for students high in fear of failure.

Task aversiveness predicts procrastination. The aversiveness of a task, which refers to how unpleasant people consider a task, is positively related to procrastination (e.g., Blunt & Pychyl, 2000). Senecal, Lavoie, and Koestner (1997) found that task aversiveness was associated with procrastination when participants expected their performance to be evaluated, as is typically the case in academic settings. Blunt and Pychyl (2000) suggest that the anticipated consequences or incentives associated with a particular task also determine how aversive a person considers a task. Hence, task aversiveness can refer to the process of goal pursuing or to the anticipated consequences (e.g., performance evaluation). In our model, fear of failure refers to the aversiveness of the anticipated consequences of an action (e.g., failing an exam), whereas task aversiveness refers to the aversiveness of the means to accomplish a given task (e.g., dislike of studying for an exam). Steel (2007) concluded from his meta-analysis that people procrastinate more often when performing unpleasant than pleasant tasks. Blunt and Pychyl (2000) identified
boredom, frustration, and resentment as relatively stable components of task aversiveness. In their study, they found a significant correlation between task aversiveness and procrastination during the actional phase (referring to the Rubicon model by Heckhausen & Gollwitzer, 1987).

**Task aversiveness moderates the relationship between process focus and procrastination.** If a student perceives the means to achieve a goal as aversive, focusing on them should increase the likelihood of procrastination in order to avoid engaging in unpleasant behaviors. Hence, we assume that process focus increases procrastination when the means are perceived as aversive. When the process of goal pursuit (but not the outcome) is experienced as aversive, it might actually help to focus on the outcome of goal pursuit. This might increase the perceived importance of achieving the goal and hence motivate a student to swallow the bitter pill of engaging in the unpleasant task to attain the outcome. Consequently, changing from a process to an outcome focus might be more adaptive in certain situations, for example, when the means are perceived as highly aversive and motivation evolves mainly from the outcome (Freund et al., 2012). In other words, the higher a student values the outcome, the more likely s/he engages in the task even if the means are aversive (Eccles, 1983).

**Linking self-efficacy, procrastination, and process focus.** The literature suggests that self-efficacy is strongly related to procrastination (Ferrari, Parker, & Ware, 1992; Haycock et al., 1998; Klassen, Krawchuk, & Rajani, 2008; Wolters, 2004). Self-efficacy plays an important role in procrastination in at least three ways: First, self-efficacy influences the perception of a goal or task. A student with high self-efficacy believes that s/he has the capacity, the competence, and the resources to manage the task. Schwarzer, Müller, and Greenglass (1999) refer to this as “can-do” cognitions. Second, after engaging in a task, highly self-efficacious people persist longer, recover more quickly from setbacks, and invest more effort in the task (Schwarzer et al., 1999; Schwarzer & Jerusalem, 1995). Third, the experience of being able to ward off distractions and attractive alternatives strengthens a person’s self-efficacy (Schunk & Swartz, 1993). As depicted in Figure 1, we suggest that there is a transfer effect: The experience of being able to manage the
task by employing one means might increase the person’s expectation in being able to successfully employ another means (Bandura, 1977). Adopting a process focus can strengthen self-efficacy by focusing one’s attention on the means and thereby making a task seem more manageable than when one focuses on the outcome. Compatible with results from Haghbin et al. (2012), procrastination should decrease as the pursuit of the goal and its completion become even more likely.

**Dynamics of goal focus and procrastination during goal pursuit**

Until now, we have focused on the mechanisms underlying the relationship between goal focus and procrastination. As was elaborated in the context of Helmke and Schrader’s (2000) dynamic model of procrastination, H. Heckhausen’s Rubicon model of action phases (1989; Heckhausen & Gollwitzer, 1987) is particularly well suited for conceptualizing the process of goal setting and goal pursuit over time. Integrating goal focus into the Rubicon model, Freund et al. (2012) provided a dynamic model of goal focus. Following this approach, we take a dynamic perspective on the relationship of goal focus and procrastination over the course of goal pursuit.

In the pre-decisional phase, a student has to decide whether or not s/he wants to adopt a goal. In order to decide if a goal is worth pursuing, the student analyzes the whole situation including the consequences of goal achievement. Blunt and Pychyl (2000) found that in the pre-decisional phase a lack of personal meaning of a project is associated with higher task aversiveness and higher procrastination in the decision to engage in the project. The more the student values the outcome the more likely s/he will engage in goal pursuit (Eccles, 1983). Therefore, Freund et al. (2012) propose that an outcome focus is most likely in this phase. However, as most goals are predefined in the academic context (e.g. as class requirements), we do not elaborate in more detail about procrastination in this phase.

During the pre-actional phase, that is, after having set a goal and before engaging in goal-relevant action, people plan the implementation of intentions in terms of how, when, and where to start (i.e., implementation intentions, Gollwitzer, 1999). Gollwitzer and colleagues (for an
overview, see Gollwitzer, 1996) demonstrated in a series of studies that implementation intentions contributed to actually engaging in goal pursuit and also increased actual rates of goal completion (e.g., Brandstätter, Heimbeck, Malzacher, & Frese, 2003; Koole & Van’t Spijker, 2000). Adopting a process focus, in other words, focusing on the goal-related means and actions during the pre-actional phase, should decrease procrastination (Gollwitzer & Brandstätter, 1997).

In the actional phase, people engage in goal pursuit to achieve their goal. According to Heckhausen and colleagues (1987), this phase is associated with a predominant focus on the outcome on a rather abstract level of representation. In contrast, Freund and colleagues (2012) posit that focusing on the outcome might cause a person to overlook good opportunities to implement goal-relevant plans and thus delay goal pursuit. Moreover, based on J. Heckhausen’s (1999) distinction between a non-urgent and an urgent actional phase, we consider that the adaptiveness of goal focus might change over the course of the actional phase (see Figure 2).

![Figure 2](image)

*Figure 2. The Shift: The dynamics of goal focus and procrastination during goal pursuit.*

When pursuing a long-term goal like writing a comprehensive term paper (compared to a short term goal like reading a paper for the next class), focusing on the activities related to goal pursuit (process focus) might help a person remain motivated more than focusing on the distant
outcome (outcome focus) during the non-urgent phase. As elaborated in more detail by Freund and colleagues (2012), the hypothesis of a predominant process focus during the actional phase is consistent with the automotive model by Bargh and Gollwitzer (1994). According to the automotive model, the repeated activation of a goal in a certain situation leads to an association between the goal and situational cues. Subsequently, the situational cues can automatically trigger goal-relevant actions without the person being consciously aware of the respective goal. Goal pursuit, then, does not require conscious awareness of the outcome in order to initiate and maintain goal-relevant actions. This suggests that procrastination is less likely when a person follows certain routines such as always writing on the term paper at the same time and place so as to increase the number of situational cues that automatically trigger goal-relevant actions.

Nevertheless, during the pursuit of long-term goals, one is likely to encounter unplanned situations and new opportunities. As adopting a process focus makes other means more cognitively accessible, it should help a person to react flexibly to new circumstances (Freund et al., 2012). For instance, if meeting with fellow students in a study group is not possible, a student with a process focus should be able to switch to other means more easily, such as using flash cards or practicing multiple-choice questions. Thus, in the non-urgent phase, adopting a process focus should help to counteract procrastination by maintaining goal pursuit even when encountering problems or new situations during goal pursuit (this phase is depicted in Figure 1).

However, this might change during the urgent phase, that is, when the deadline for goal achievement (e.g., a final exam) is very near. Deadlines increase a person’s effort in goal pursuit. Several longitudinal studies have shown that procrastination decreases when a deadline approaches (Moon & Illingworth, 2005; Pychyl, Lee, Thibodeau, & Blunt, 2000; Schouwenburg, 1995). As Schraw and colleagues (2007) pointed out, people who procrastinate also tend to organize their academic life around deadlines.

The focus on an approaching deadline means constantly comparing the current state with the distant goal. This might increase fear of failure and, thereby, procrastination. Furthermore, if
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students who still have a lot of time to study focus on the deadline too early, they might perceive goal pursuit as exhausting (after all, one still has a long time to go), which might also result in procrastination. In contrast, concentrating on the means of goal pursuit should reduce fear of failure and, thereby, procrastination (Pham & Taylor, 1999). In the urgent phase, however, the negative consequences of missing a deadline might function as an incentive to organize action in a timely manner (Ariely & Wertenbroch, 2002). Here, approaching a deadline should increase the likelihood that one closely monitors the distance to the goal (J. Heckhausen, 1999), which, in turn, provides a clear comparison standard and thereby increases the likelihood of goal achievement (e.g., Locke & Latham, 2002). In other words, approaching a deadline should increase the salience of the outcome when actual goal attainment becomes more and more proximal. One of the processes contributing to the differences between the two phases might be temporal discounting. Temporal discounting refers to the observation that large rewards in the distant future are valued less than smaller but immediate rewards (Frederick, Loewenstein, & O'Donoghue, 2002). Thus, if in the non-urgent phase more immediate rewards are present while studying for a distant exam, procrastination is likely to occur. As elaborated above, a process focus dampens this effect because it offers more opportunities for positive reinforcement along the way. In the urgent phase, however, an approaching deadline makes the positive consequences of attaining the goal (and the negative consequences of failing to attain it) more salient, thereby decreasing procrastination. In fact, in one study conducted in our group, we found that deadlines induced a shift from process to outcome focus in university students writing a term paper (Walter, 2009). When a deadline is very close, a person has to overcome all factors contributing to procrastination (e.g., task aversiveness) by focusing his/her attention on the outcome and, thereby, increasing its subjective importance. The perceived or actual negative consequences of missing a deadline may function as a strong incentive to engage in goal pursuit and thereby decrease procrastination (Schraw et al., 2007). This should be even more the case when focusing on the outcome during the urgent phase. As a consequence, adopting an outcome
focus when approaching a deadline should increase the monitoring of closing the gap between the actual and the desired state (see Figure 2). Moreover, one could argue that that the goal pursuer can now profit from the self-efficacy s/he has built during the non-urgent phase and is better able to master this last phase of goal pursuit. Hence, the anticipated negative consequences of failing to reach the goal might dominate over all other concerns or task aversiveness and, as a consequence, reduce procrastination.

Taken together, with respect to procrastination, our model assumes that a process focus is more adaptive than an outcome focus in the non-urgent part of the actional phase. A process focus allows a person to be flexible with regard to new opportunities or situational changes (Zimmerman & Kitsantas, 1997). When a deadline approaches and a person enters the urgent phase, the outcome might become more salient (Freund et al., 2012). In sum, with respect to procrastination, it might be most beneficial to shift from process focus to outcome focus when the urgent part of the action phase begins.

Finally, in the post-actional phase, the focus lies on the outcome, as it centers on goal evaluation. Here, procrastination might affect the person’s reflection processes and their future decisions. For example, students could procrastinate on checking their grade online or they could delay the decision to sign up for a repetition class to take an exam for the second time. In a study with psychology students, Sirois (2004) showed that procrastination was related to downward counterfactual thinking. Students who found themselves in an anxiety-provoking situation were more likely to procrastinate and, moreover, to avoid thoughts about ways in which things could have been better. Focusing on the outcome in the post-actional phase opens up the possibility to either acknowledge goal success and boost self-efficacy for the next goal pursuit or to disengage from the current goal by engaging in the pursuit of new goals.

Taken together, both procrastination and goal focus are dynamic constructs that depend on the motivational phase. However, the dynamics are not only of a temporal nature but also concern the role of the context in procrastination.
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Dynamics of procrastination as action in context

The context and conditions of studying for an exam are highly relevant for the development of procrastination in general (Senecal et al., 1997) and for the relationship between procrastination and goal focus in particular (see Figure 1). As Wolters (2003) pointed out, “procrastination may be fostered by context-specific factors that promote students’ fear of failure, evaluation anxiety, feelings of incompetence, or task aversiveness” (p. 179). Context-specific factors that help a student to deal with procrastination are, for example, the absence of distractors, social control (by peers, parents, or teachers), daily routines, the amount of detailed planning, and a reward system (e.g., Dietz, Hofer, & Fries, 2007; Schraw et al., 2007; van Eerde, 2000). The degree to which a task is externally structured seems to play a particularly important role. Pychyl (2011) suggested that research on procrastination should take into account notions of responsibility and autonomy. Thus, we will focus on the frequency of feedback during goal pursuit (as a guide for actions) and the degree of autonomy in pursuing a given task (as an indicator of the lack of external structure), and their relation to goal focus. Using the example of a student’s transition from high school to college, we will compare some of the characteristics of high school and college, two learning environments in which procrastination occurs frequently, with respect to academic procrastination.

Feedback frequency and autonomy

At high school, the degrees of freedom regarding studying are much more constrained compared to college (Wild, 2000). These constraints are partly due to a much more regulated study schedule at high school. In Europe, high school students usually attend classes in the morning and in the early afternoon and are expected to do their homework in the late afternoon or evening. The homework is often due the next day, leading to a highly regulated study schedule that helps students to structure their day and to implement daily study routines. Daily routines can enhance goal pursuit and decrease procrastination (Dietz et al., 2007). Furthermore, high school students typically receive frequent and relatively prompt feedback. Latham and Seijts
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(1999) claim that “feedback functions as a moderator of goal effects because the combination of goals plus feedback is more effective than goals only” (p. 708). According to goal setting theory (Locke & Latham, 2002), goal-progress feedback informs people about how to best pursue their goals. It motivates them to work on the goal by monitoring their progress and by showing them that sub-goals can be achieved (Schunk & Swartz, 1993). Additionally, temporally close feedback minimizes the requirement for delay of gratification (Howell & Watson, 2007). We assume that the highly structured context of high-school students simulates a constant urgent phase. Thus, the high-school context makes the adoption of an outcome focus more likely and adaptive.

Van Eerde (2000) notes that a certain amount of autonomy is a necessary precondition for procrastination. One significant change in study contexts when transitioning from high school to college is that the frequency of feedback decreases substantially while autonomy with respect to how, when, and what to study increases (Raymore, Barber, Eccles, & Godbey, 1999). College students have to attend classes but they might be spread out across the day, sometimes with a number of hours of unstructured time between classes. Moreover, course requirements are due with more time in between receiving the task and having to hand it in. This places higher demands on self-regulation (van Eerde, 2000). Moreover, feedback is typically more delayed, which necessitates greater ability to persist in a task without immediate gratification (Mischel & Ayduk, 2004). During the study process, college students have to maintain their learning motivation over a longer period of time, which requires a number of self-regulatory skills, such as solving problems on their own, persisting in the face of setbacks, and, importantly, warding off possible distractions. In contexts like these, that offer high degrees of freedom and only infrequent external feedback, it might be particularly beneficial for college students to adopt a process focus to counteract procrastination.

Thus, the specific study context plays an important role for the adaptiveness of goal focus in reducing procrastination. In particular, the structuredness of the study context, the degrees of freedom or autonomy, and the frequency of feedback are likely to influence procrastination.
Summary, Empirical Implications, and Conclusion

This article introduced the concept of goal focus to the investigation of procrastination by presenting a dynamic model of goal focus and procrastination. Our model proposes that goal focus interacts with well-known antecedents of procrastination, namely fear of failure, task aversiveness, and self-efficacy. More specifically, we suggest that a process focus might help by reducing the negative effect of fear of failure during the initiation and maintenance of goal pursuit. Furthermore, we propose that a process focus might increase self-efficacy, which, in turn, is negatively related to procrastination. On the other hand adopting an outcome focus might help coping with task aversiveness and reduce procrastination when the very process of goal pursuit is perceived as aversive. The model currently awaits direct empirical tests. It is our hope that this article will stimulate such empirical research. Although we have focused on procrastination in the academic domain as a prototypical sample case in this article, the model is designed to be general and can be applied to non-academic contexts such as health behaviors or work. Taking an ideographic approach, one could also investigate procrastination regarding people’s personal goals, for instance using Little’s Personal Projects Analysis (for a similar approach see Blunt & Pychyl, 2005). In the following, we mention the main three empirical hypotheses that can be derived from our model.

First, the model postulates that the cognitive representation of the goal primarily in terms of its process or its outcome could either increase or decrease procrastination depending on the motivational phase, fear of failure, and task aversiveness. Thus, empirical research needs to go beyond person-related variables such as self-efficacy and fear of failure and include the cognitive representation of the goal. Second, the study of procrastination requires a dynamic perspective on procrastination as changing over the course of goal pursuit (Helmke & Schrader, 2000). Likewise, we posit that the adaptiveness of goal focus varies by motivational phase. A process focus is hypothesized to be more beneficial than an outcome focus when one is attempting to overcome procrastination during the non-urgent actional phase. During the urgent phase (i.e.,
when a deadline is very close), an outcome focus should increase the importance goal achievement and thereby decrease procrastination irrespective of task aversiveness. To test these hypotheses, research needs to include multiple measurement occasions that repeatedly assess procrastination and its antecedents over time and motivational phases. One possible study that is currently undertaken entails a field study repeatedly assessing students’ goal focus, fear of failure, task aversiveness, procrastination, and study behavior when they study for an exam over a longer time period (i.e., from the beginning of the study phase until after the exam). In another approach, we will manipulate students’ goal focus to be able to make better inferences about the causal associations between goal focus and procrastination. A third important implication of our model is that the context needs to be considered as well. One very promising way of studying the role of context might be a comparison of the setting of high schools with that of colleges, as they differ systematically on important dimensions (frequency of feedback, autonomy) that might contribute to procrastination.

This paper introduced a theoretical framework focusing on the mechanisms underlying individual differences in procrastination and their interaction with contextual variables. We emphasized the role of the cognitive representation of a goal more in terms of its means (process focus) or its consequences (outcome focus) for procrastination. Moreover, we have stressed the dynamic changes of the role of goal focus for procrastination over the course of the motivational process. Finally and importantly, the model stresses the characteristics of the means (i.e., task aversiveness) and the outcome (i.e., fear of failure) as moderators for the impact of goal focus on procrastination. Thus, our model integrates individual differences, motivational aspects as well as contextual influences. We maintain that such a complex model is necessary when dealing with such a complex phenomenon as procrastination. With the exception of goal focus, these factors have been considered in previous research on procrastination. However, none of the existing research integrates the construct of goal focus and the interactions of goal focus with task aversiveness and fear of failure into a dynamic model considering the different phases of goal
setting and pursuit. Thus, the model offers the possibility to make specific predictions for the likelihood of procrastinating for each point in time during goal pursuit depending on the goal focus, fear of failure, and task aversiveness. This should also help in designing interventions how to beat procrastination.
PART II:

DELAY OR PROCRASTINATION –

A COMPARISON OF SELF-REPORT AND BEHAVIORAL MEASURES OF PROCRASTINATION AND THEIR IMPACT ON AFFECTIVE WELL-BEING

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Abstract

A short-term longitudinal study (N = 162 undergraduate students) replicates and extends previous findings on the relationship between self-reported procrastination and behavioral measures of procrastination (i.e., a comparison between actual and planned study time), and assesses their relation with affective well-being. All variables were measured 16 times over the course of eight weeks. State measured self-reported and behavioral procrastination correlated only moderately. In line with the definition of procrastination as a combination of delaying to work on a task and discomfort with the delay, affective well-being was better predicted by self-reported than by behavioral procrastination. This suggests that self-reported procrastination better reflects the construct than a purely behavioral measure of procrastination. Consequences and implications for further assessment of procrastination are discussed.

Keywords: Procrastination, discomfort, assessment, self-report, behavioral measures, affective well-being
Introduction

Unfortunately, most of us know the phenomenon of procrastination all too well, i.e., to delay working on a goal one has intended to pursue and feeling guilty about it. Although most authors agree on these two key elements of procrastination – delay and discomfort –, there is no agreement in the literature on an exact definition (Corkin, Yu, & Lindt, 2011; Steel, 2010). Along with the diversity in the definition of procrastination comes the challenge to find an adequate way to measure the phenomenon. There are a number of well-documented and frequently used measurement instruments of procrastination, such as the Academic Procrastination State Inventory (APSI, Schouwenburg, 1995), the General Procrastination Scale (GPS, Lay, 1986), and Academic Procrastination Scale (APS, Aitken, 1982), as well as more recently developed scales combining previous scales, such as the scale “Procrastination” (Schwarzer, 2000) and the Pure Procrastination Scale (Steel, 2010). What most of these scales have in common is that they assess different aspects of habitual procrastination, such as delaying to work on a task, concentration deficits, lack of energy and persistence, and the feeling of guilt or frustration about not having proceeded as planned.

How well do self-report procrastination scales reflect behavior?

Much of the extant literature on procrastination has adopted self-report instruments and methodologies to assess this phenomenon. However, how well scale-based self-report measures of procrastination reflect the actual behavior remains subject of an on-going debate (Steel, Brothen, & Wambach, 2001), and is currently understudied. However, there are some notable exceptions. For instance, the pioneers of procrastination research, Solomon and Rothblum (1984), intended to assess the prevalence of procrastination for very specific academic behavior using the Procrastination Assessment Scale for Students (PASS). They let students report procrastination for specific academic situations such as writing a term paper or keeping up with weekly reading assignments, and asked them to which degree procrastination is a problem for them. In addition to these measures, Solomon and Rothblum assessed as a behavioral index of
procrastination how many self-paced quizzes students took in the last third of the semester. They found only relatively moderate positive correlations between the number of quizzes and self-reported procrastination, and conclude that affective and cognitive aspects have to be considered for a comprehensive understanding of the phenomenon.

We shortly review three studies comparing self-reported academic procrastination on a trait level with behavioral procrastination measured multiple times. In the studies by Moon and Illingworth (2005) and Steel, Brothen, and Wambach (2001), behavioral academic procrastination was operationalized as the difference between the date an introductory psychology test was available on the Internet and the day students actually took the test. Results showed moderate positive correlations between trait self-report procrastination and behavioral procrastination. Steel et al. (2001) observed a lack of convergence between observed and self-report measures due to the notion that in self-report measures of procrastination participants often retrospectively negatively evaluate their behavior. Moon and Illingworth (2005) concluded that trait-based assessments of procrastination might not adequately describe actual behavior.

DeWitte and Schouwenburg (2002) used a different behavioral measure of procrastination, namely how many hours students intended to study during the coming week and how many hours they actually had studied in the prior week. They assessed behavioral procrastination over the period of 10 weeks in a sample of $N = 21$ university students, and correlated this measure with a trait measure of procrastination. They found behavioral procrastination to be unrelated to the trait measure of procrastination and explain their findings with their rather small sample size.

**Goal 1: Comparison of self-report procrastination over time with actual behavior**

Although these studies provide important foundations for future procrastination research, there are limited in a key way: They investigated the relationship between self-reported procrastination measured on a trait level and multiple measures of specific behavioral procrastination over time. To date, it has not been investigated how indices of both self-report and behavioral
procrastination relate when both are measured multiple times. Therefore, the first goal of the present research is to expand the validation of self-report measures of procrastination by relating them to behavioral measures of procrastination in a study over time in a real life situation in the academic context. We employ a state-based self-report measure of procrastination (APSI, Schouwenburg, 1995) and a behavioral measure in a short-term longitudinal study with university students. The behavioral measure is based on DeWitte and Schouwenburg (2002) and consists of the difference between planned and actual study hours.

The approach of assessing both self-reported and behavioral measures of procrastination repeatedly over time offers two advantages. First, such data allow us to validate self-reported procrastination measured over time with a behavioral proxy of procrastination over time, hence we close a gap in the literature. Second, the repeated-measures design permits estimation of trajectories and the development of both measures over a short period of time. These models allow us to detect similarities and differences of the measures during a real-life study situation.

**Goal 2: Validation of self-report procrastination via affective well-being**

Procrastination research seems to agree on the notion that not all delay is procrastination but all procrastination is associated with delay (Pychyl, 2009). So, what differentiates procrastination from delay? Defining procrastination as tendency to delay initiation or completion of important tasks to the point of discomfort (Howell & Watson, 2007; Solomon & Rothblum, 1984) ties the phenomenon to the feeling of guilt, or generally lower levels of well-being (i.e., Pychyl, Lee, Thibodeau, & Blunt, 2000). Steel and Ferrari (2013), for example, state that procrastination is delaying something “despite expecting to be worse off for the delay” (p.51). Krause and Freund (2013) pointed out that the feeling of guilt might even be functional for bringing procrastinating persons back on track. Most of the self-reported procrastination scales include items reflecting this emotional aspect of the construct (Klingsieck, 2013). For instance, Milgram, Batori, and Mowrer (1993) found that procrastination measured with the PASS correlated moderately high with emotional upset. More importantly in the current context,
Steel et al. (2001) found that trait affect correlated with self-reported but not with behavioral procrastination. In other words, although a behavioral measure of procrastination seems to assess delay it might fail to reflect the emotional aspect that is essential in the definition of procrastination. In consequence, Corkin, Yu, and Lindt (2011) propose the term “active delay” to differentiate a form of delay that lacks the irrationality and negative emotions from procrastination. Thus, we expect that affective well-being as an important part of the construct of procrastination can be predicted best by self-report measures of procrastination, whereas a behavioral measure does not provide information about the emotions accompanying the delay.

In sum, the purpose of this paper is to (1) broaden and replicate previous findings on the relation between self-report and behavioral measures of procrastination over time with multiple measurement occasions by using a state measure of procrastination (instead of a one-time trait assessment as was done in previous research) and (2) investigate if state self-report measures of procrastination predict affective well-being better than a state measure of behavioral procrastination.

Method

Participants

The sample consisted of $N = 162$ undergraduate university students (75% female; $M_{\text{age}} = 21.43$ yrs.) who were recruited in two lecture classes (Introduction to Law) at the University of Zurich.

Procedure

Before registering for participation, students were informed of the purpose and scope of the study and provided informed consent. As an incentive for their participation, participants entered a raffle for Amazon book vouchers with a total value of CHF 5000,– (equivalent to 5400 US$).

Data was collected in a nine-week longitudinal online study during student’s studying phase for an exam in “Introduction to Law.” The study consisted of 16 measurement points.
The questionnaires were administered via a tool for online surveys (www.soscisurvey.com). As a reminder, participants received emails containing a link to each questionnaire. In the first questionnaire students also filled out a measure of trait procrastination and reported their age. In the following eight weeks, participants filled out web-based questionnaires twice a week and each time rated their academic procrastination, their planned and actual studying time, their affective well-being, and other measures not relevant to the current study. After the exam, we assessed whether students had passed the exam and how satisfied they were with the way they had studied for the exam. For the present set of analyses, we used the following measurement instruments.

If not noted otherwise, participants rated all items on a 7-point scale ranging from 0 = not at all to 6 = very much. Means, SDs, and internal consistencies of the measures are provided in Table 2.

Table 2
Descriptive Statistics and Correlations Among the Study Variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Academic Procrastination (State)</td>
<td>-</td>
<td>.32***</td>
<td>-.25**</td>
<td>.59***</td>
</tr>
<tr>
<td>2. Behavioral Procrastination¹</td>
<td>-</td>
<td>-.04</td>
<td>-</td>
<td>.22**</td>
</tr>
<tr>
<td>3. Affective well-being</td>
<td>-</td>
<td>-</td>
<td>-.25**</td>
<td></td>
</tr>
<tr>
<td>4. Academic Procrastination (Trait)⁺</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
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</thead>
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<tr>
<td>1. Academic Procrastination (State)</td>
<td>3.54</td>
<td>.95</td>
<td>&gt;.81</td>
</tr>
<tr>
<td>2. Behavioral Procrastination¹</td>
<td>26.62</td>
<td>39.96</td>
<td>-</td>
</tr>
<tr>
<td>3. Affective well-being</td>
<td>4.89</td>
<td>1.07</td>
<td>&gt;.85</td>
</tr>
<tr>
<td>4. Academic Procrastination (Trait)⁺</td>
<td>3.44</td>
<td>1.13</td>
<td>.88</td>
</tr>
</tbody>
</table>

Note. N = 139 – 188 for a maximum of 16 measurement points. ¹Subtraction of actual study time from planned study time in minutes. ⁺Only one assessment at T₀. *p < .05. **p < .01 ***p < .001

Measures

**Academic Procrastination.** To capture state procrastination in the academic context, we used a subset of 11 items of the 13-item Academic Procrastination State Inventory (APSI, by
Schouwenburg, 1995; German translation by Helmke and Schrader, 2000). The resulting 11-item scale measures facets of procrastination such as delay, concentration deficits, and lack of energy. Participants were instructed as follows: “Please indicate, how frequently in the last days you engaged in the following behavior.” A sample item is: “You put off the completion of a task.”

**Behavioral academic procrastination.** Based on the study by DeWitte and Schouwenburg (2001), we asked students to report how much time (in minutes) they had planned to study in the past 24 hours (planned study time) and how much time (in minutes) they had actually spent studying in the past 24 hours (actual study time). We subtracted the actual study time from the planned study time and used the result as an indicator of behavioral procrastination.

**Trait Procrastination.** To assess procrastination on the trait level we used 10 items of the 12-item Pure Procrastination Scale (Steel, 2010; own translation into German). A sample item is: “I am continually saying "I'll do it tomorrow".”

**Affective Well-being.** Affective well-being was assessed in terms of positive and negative affect using two parallel 4-item short versions of the mood subscale of the multidimensional mood-questionnaire (Steyer, Schwenkmezger, Notz & Eid, 1997). Participants indicated how “good/happy/bad/…” they felt at the specific moment.

**Results**

Correlations between the measures are provided in Table 2. Trait and state procrastination were positively correlated with each other and both with behavioral procrastination.

---

2 According to results by Helmke and Schrader (2000) the item “Experienced concentration problems when studying” loaded not only on the procrastination factor but also on the factor fear of failure; the item “Forgot to prepare things for studying” had a factor loading < .44. Hence, we excluded these two items.

3 We excluded two items that were related to decisional procrastination, because they were not relevant in the current context where the decision to take the exam had already been made.
procrastination. Affective well-being correlated moderately negatively with academic state procrastination and trait procrastination, but not with behavioral procrastination.

To examine similarities and differences in the two measures of procrastination over time, we first evaluated their relative stability. The average test-retest reliability coefficient for self-report academic procrastination across the 16 measurement occasions was $r = .69$. For behavioral procrastination, the average test-retest reliability was $r = .39$. In addition to the relatively lower stability estimate, the behavioral measure of procrastination exhibited more variability in terms of pairwise consecutive assessments. Figures 3 and 4 show the trajectories for self-report academic procrastination and behavioral procrastination, respectively.

![Figure 3. Self-reported procrastination across 16 measurement points](image-url)
Figure 4. Behavioral procrastination across 16 measurement points

Note. Behavioral procrastination comprised the difference between actual and planned study time in minutes.

To test the concurrent validity of the self-report and behavioral measures of procrastination, a series of simple regression analyses were conducted within each time point. Self-report procrastination was a positive significant predictor of behavioral procrastination at 12 of the 16 measurement occasions ($R^2$ between .05 and .13, $p < .05$, $F > 4.03$).

In a next step, we assessed how well self-report procrastination predicted behavioral procrastination by the previous measurement point (-1 lag). In four of the 15 measurement- occasions, self-report procrastination at $T_{-1}$ significantly predicted behavioral procrastination at $T_0$ (all $R^2$ between .04 and .1, all $p < .05$, all $F > 4.12$).

To test the hypothesis that self-reported procrastination is a better predictor of affective well-being than behavioral procrastination, we ran a multilevel analysis with self-reported procrastination (mean-centered), behavioral procrastination (mean-centered) and time as
predictors. We analyzed the data using the linear mixed models procedure in SPSS (with Maximum Likelihood for deriving parameter estimates).

We chose a stepwise procedure using $\chi^2$ tests to build the final model (Model 5) that best fit the data. Table 3 summarizes all successfully tested models.

**Table 3**
Multilevel Estimates for Predicting Affective well-being

<table>
<thead>
<tr>
<th></th>
<th>Nullmodel</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
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<tbody>
<tr>
<td>$t$</td>
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<td>$t$</td>
<td>$t$</td>
<td>$t$</td>
<td>$t$</td>
</tr>
<tr>
<td>Intercept</td>
<td>150.51***</td>
<td>61.27***</td>
<td>63.04***</td>
<td>62.86***</td>
<td>64.41***</td>
<td>63.37***</td>
</tr>
<tr>
<td>Measurement point</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/random intercept</td>
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</tr>
<tr>
<td>Behavioral Procrastination</td>
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<tr>
<td>/random intercept</td>
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<tr>
<td>Self-report Procrastination</td>
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<td></td>
<td></td>
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<tr>
<td>/random intercept</td>
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<tr>
<td>Deviance</td>
<td>5272.67</td>
<td>4681.63</td>
<td>4672.79</td>
<td>4642.3</td>
<td>4600.2</td>
<td>4584</td>
</tr>
<tr>
<td>(-2*log(lh))</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Diff Deviance</td>
<td>591.04***</td>
<td>8.84*</td>
<td>30.49***</td>
<td>42.11***</td>
<td>16.2*</td>
<td></td>
</tr>
<tr>
<td>(Diff-2*log)</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>$\Delta df$</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* $^* p<.05$, $^{**} p<.01$, $^{***} p<.001$; the random slope model of behavioral procrastination was not significant, hence we proceeded model comparisons with the random intercept.
The stepwise procedure allowed detecting if the behavioral indicator of procrastination drops out of the Model as a predictor when self-report procrastination is added. In the final model, significant predictors of affective well-being were time (measurement occasion), \( F(1, 1441.37) = 12.38, p < .001 \) and self-report procrastination, \( F(1, 120.57) = 31.83, p < .001 \). Behavioral procrastination was no significant predictor of affective well-being, \( F(1, 1499.93) = 3.29, p = .07 \). In addition, the model shows significant variation in the individual slope of self-report procrastination (see Table 3, comparison between Model 4 and 5, and Table 4 for parameter estimates for Model 5).

**Table 4**

Mixed Model Estimates of Effects Predicting Affective well-being

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>5.05</td>
<td>.08</td>
<td>63.37</td>
<td>163.84</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Time (Measurement point)</td>
<td>−.03</td>
<td>.007</td>
<td>−3.52</td>
<td>92.03</td>
<td>.001</td>
</tr>
<tr>
<td>Behavioral Procrastination</td>
<td>−.0008</td>
<td>.0005</td>
<td>−1.81</td>
<td>1459.7</td>
<td>.07</td>
</tr>
<tr>
<td>Academic Procrastination (Self-report state level)</td>
<td>−.23</td>
<td>.04</td>
<td>−5.64</td>
<td>122.83</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Note. \( N = 162 \), maximum of 16 assessments. The full model included two levels, namely assessments within persons. Level 1 comprised assessments: \( y_{00} + y_{01} \times (\text{time/Mp})_j + y_{02} (\text{BHVPProcr})_j + y_{03} \times (\text{SRProcr})_j + E; \)

Level 2 comprised persons: \( \beta_{00} + r_j \)

Additional analyses. To determine the growth curve trajectories of self-reported procrastination and behavioral procrastination, we conducted several nested model comparisons, thereby assessing the improvement in model fit of the growth curve models (using the mixed model function in SPSS). For self-reported academic procrastination the linear, \( F(1, 1520.02) = \)
23.47, \( p < .01 \), the quadratic, \( F(1, 1448.82) = 15.5, p < .01 \), and the cubic, \( F(1, 1446.4) = 13.41, p < .01 \), trends all significantly described the pattern over time. For the behavioral measure of procrastination none of the trends were significant.

**Discussion**

There are two main findings of this study: (1) Self-reported state procrastination is moderately positively correlated with a behavioral measure of procrastination (i.e., the difference between planned and actual study time) over 16 consecutive measurement occasions and (2) Self-reported but not behavioral procrastination negatively predicted one of the two central aspects of procrastination, namely affective well-being.

The results broaden prior research by showing that the correlation of self-reported and behavioral measures of procrastination is stable over time. This is remarkable when taking into account that the trajectories of the two measures show differences in their stability across time, with self-reported procrastination being more stable and declining towards the deadline (i.e., the exam) while the behavioral measure shows more fluctuation throughout the course of the study.

The finding that only self-reported but not behavioral procrastination predicted affective well-being, suggests that behavioral measures of procrastination reflect delay but do not tap into the affective component of procrastination. Importantly, all of the variables were assessed as state constructs referring to the past couple of days. This rules out one of the shortcomings of previous research that assessed self-reported procrastination and subjective well-being both on the trait level but behavioral procrastination on the state level.

The results of the current study are in line with research by Pychyl, Lee, Thibodeau, and Blunt (2000). They also found in an experience sampling study that behavioral measures of procrastination were not associated with affect. Pychyl et al. argue, that behavioral procrastination might not only be tied to a feeling of guilt but also to positive affect people experience during a procrastination episode, because they engage in enjoyable activities instead of the procrastinated task. In contrast to the simultaneous assessment of behavioral procrastination
and affect in a given situation, their trait measure of procrastination reflected past behavior (i.e., “In the past days, how much did you put off your task?”). Participants might have evaluated their past behavior more negatively because they felt guilty about not having studied when looking back. In our design, we avoided this problem by assessing both measures of procrastination referring to the same time frame.

Limitations. One limitation of this study is that the self-report measure of procrastination and the measure of affective well-being were both operationalized using 7-point scale ratings, whereas behavioral procrastination was indexed by a difference score of planned minus actual study time. Hence, self-reported procrastination and affective well-being shared some common method variance (Richardson, Simmering, & Sturman, 2009). However, the moderate positive correlation using mono-trait hetero-methods provides convergent validity for the underlying latent construct (Campbell & Fiske, 1959).

Another limitation is that the behavioral measure of procrastination (i.e., the difference between planned and actual study time) was also self-reported. To address the issue of potential miscalculation of the planned and actual study time by feelings of having procrastinated (as assessed by the self-report measure), future studies could assess the actual time spent studying or preparing for an exam using an online study platform (see Steel et al., 2001). This allows assessing actual study behavior in a computerized PSI (personalized system of instruction) environment, and thereby limits the amount of potential self-report bias.

Conclusion. The current study provides evidence for the usefulness of self-report measures of procrastination as reflecting both of the central aspects of procrastination, namely delay and feelings of discomfort. Going beyond previous research, we show that the usefulness of self-report measures of procrastination is not due to a higher aggregation level when assessing trait procrastination, but also holds for a state measure. The use of a state measure offered new insights into the temporal trajectory of self-reported procrastination that can be clearly distinguished from measures of pure delay (see also, Corkin et al., 2011).
In sum, our results hopefully help to appease those concerned that self-report measures of procrastination might not be able to reflect actual behavior. They do, and they do even more as they are clearly superior in predicting negative affective well-being. Thus, we maintain that self-reported procrastination provides a more comprehensive assessment of than purely behavioral measures do.
PART III:  
PROCESS FOCUS HELPS AGAINST PROCRASTINATION  
IN THE ACADEMIC CONTEXT  

Kathrin Krause  
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Abstract

Two studies tested the hypotheses that focusing on the process of goal pursuit is associated with lower levels of procrastination and that this relationship is moderated by fear of failure and task aversiveness. Using the sample case of academic procrastination, Study 1 ($N = 92$), a hypothetical scenario study, and Study 2 ($N = 50$), a five-week longitudinal study assessing self-reported procrastination, showed that adopting a process focus is negatively associated with procrastination when working on typical academic tasks (e.g., studying for an exam). Process focus was also negatively related to task aversiveness and fear of failure. However, findings regarding the proposed moderation effects of fear of failure and task aversiveness were mixed. The results support the assumption that the cognitive representation of a goal primarily in terms of its means or outcome is a predictor of procrastination: Focusing on the process of a task can help to reduce procrastination.

*Keywords*: procrastination, goal focus, motivation, self-regulation, fear of failure
Introduction

Almost all of us have from time to time experienced the woes of procrastination – to delay such goals as doing the taxes or making arduous changes to a manuscript in the third round of revisions. Procrastination is defined as the delay of the initiation or completion of a goal to the point of discomfort (Howell & Watson, 2007; Solomon & Rothblum, 1984). As students and teachers are well aware, procrastination is highly prevalent in the academic context, affecting 85% of students (Schouwenburg & Groenwoud, 2001). Procrastination is associated with a number of negative consequences, such as perceived stress, poor health, lower subjective well-being, and lower performance in academic tasks (Steel, Brothen, & Wambach, 2001; Tice & Baumeister, 1997; Vansteenkiste, Soenens, Luyckx, & Lens, 2009). Thus, people who procrastinate probably perform worse than others, feel more stressed and guilty, and know that they are worse off due to delaying the task (Schraw, Wadkins, & Olafson, 2007). Why, then, do people procrastinate?

Research to date has identified several factors related to procrastination: When students fear to fail in achieving their goal, when they find goal pursuit to be aversive, or when they doubt their abilities to perform the task, their tendency to procrastinate increases (e.g., Flett, Blankstein, Hewitt, & Koledin, 1992; Senecal, Lavoie, & Koestner, 1997; Wolters, 2003).

Given that procrastination refers to delaying the pursuit of a goal, it is surprising how little attention has been given to the potential association between cognitive goal characteristics and procrastination. We aim at closing this gap by empirically testing the impact of the cognitive representation of a goal on procrastination. Recently, we have presented a model linking goal focus, fear of failure, and task aversiveness to procrastination (Krause & Freund, 2013). Specifically, this model posits that the cognitive representation of a goal primarily in terms of the process or the outcome of goal pursuit influences how much people procrastinate. Moreover, this model hypothesizes that goal focus moderates the impact of task aversiveness and fear of failure on procrastination, positing that focusing on the outcomes of a given goal reduces procrastination when a given task is perceived as aversive, but that focusing on the process
reduces procrastination when fearing failure. Two studies with students test these associations using a vignette approach (Study 1) and a short-term longitudinal assessment of study behavior when preparing for an exam (Study 2).

**Goal Focus and Procrastination**

When we pursue a goal, we link means of achieving a goal to a certain end (e.g., Kruglanski, 1996), focusing either on the means (*process focus*) or on the outcome of goal pursuit (*outcome focus*; Freund, Hennecke, & Mustafic, 2012). A number of studies have demonstrated positive effects of process focus, such as better mood and higher adherence to an exercise goal (Freund, Hennecke, & Riediger, 2010), more success in dieting behavior (Freund & Hennecke, 2012) as well as study outcomes such as grades (Pham & Taylor, 1999). Conversely, Fishbach and Choi (2012) showed that attending to the outcome during goal pursuit (vs. attending to the experience itself) decreased goal activity and undermined goal pursuit. Taken together, focusing on the means versus the ends of goal pursuit (process versus outcome focus) influences goal adherence and performance.

Given that procrastination denotes difficulties in goal adherence (i.e., initiating and maintaining goal pursuit), we hypothesize that goal focus is also related to procrastination (Krause & Freund, 2013). More specifically, process focus should help to reduce procrastination in several ways. First, the process of goal pursuit is more concrete than the outcome and focusing on the process should thus provide more concrete guidelines for action (Carver & Scheier, 1995; Freund et al., 2010). In fact, McCrea, Liberman, Trope, and Sherman (2008) showed that students procrastinate less when a given task is represented in more concrete terms. Second, a process focus provides no clear comparison standard between the actual and desired end state of goal pursuit. On the one hand, one could argue that a clear comparison standard (as provided by the outcome) is beneficial for monitoring progress. On the other hand, the negative discrepancy between the actual and the desired state – that is particularly large in the initial states of goal pursuit – should lead to negative affect which, in turn, might undermine (re-)initiation of
goal pursuit. In contrast, previous studies have shown that adopting a process focus, however, is associated with positive affect and a “the way is the goal”-attitude (Freund et al., 2010), which necessitates less delay of gratification when pursuing long-term goals (Steel & König, 2006). This is important because people who procrastinate tend to downplay the value of long-term, large rewards and instead fall for immediate ones (Howell & Watson, 2007). If goal pursuit is experienced positively, focusing on the process likely counteracts this tendency by offering more opportunities for positive reinforcement along goal pursuit. Note, however, that the flipside of this assumed association is that a process focus should increase procrastination when goal pursuit is perceived as aversive. We investigated this moderation hypothesis in the current studies.

Finally, the third reason why a process focus should be associated with lower procrastination is that, by virtue of drawing attention to how a given goal can be pursued, a process focus should offer more flexibility to switch to other means after failure (Freund et al., 2012; Kruglanski et al., 2002).

In sum, then, we hypothesize, that a process focus reduces procrastination and, as a result, benefits goal progress and goal completion. In addition, our procrastination model (Krause & Freund, 2013) takes into account fear of failure and task aversiveness as moderating factors of the relation between goal focus and procrastination (see Figure 5).

**Figure 5.** Dynamic procrastination model: The relation between procrastination and goal focus (after Krause & Freund, 2013)
Fear of failure and task aversiveness

Academic achievement situations might generally foster an outcome focus because they stress the importance of outcomes such as passing an exam or receiving good grades. Even if the outcome is framed in positive terms, focusing on the outcome also comprises a stronger attention to the possible negative consequences of failing to achieve a goal than when focusing on the process of goal pursuit. Focusing on such potential negative consequences, in turn, should intensify students’ fear of failure. Prior research provides evidence that fear of failure is positively related to procrastination (e.g., Haghbin, McCaffrey, & Pychyl, 2012; Haycock, McCarthy, & Sky, 1998; Helmke & Schrader, 2000; Solomon & Rothblum, 1984). Focusing on the means of goal pursuit, e.g., focusing on the different actions required to pass an exam, draws attention away from the negative consequences of failing to attain the goal. This should be particularly beneficial for students high in fear of failure.

Focusing on the means, however, should be detrimental when the means are perceived as unpleasant. Not surprisingly, prior research shows that people procrastinate more when the task is more aversive (Blunt & Pychyl, 2000; Steel, 2007). Task aversiveness refers to the degree to which students perceive the means of studying as boring, unpleasant, aversive, and frustrating. When students perceive the means associated with a goal as highly aversive, focusing on these highly aversive means likely aggravates procrastination. In contrast, adopting an outcome focus should increase the salience of the (desired) outcome and reduce attention to the aversive means (Eccles, 1983).

Behavioral and affective consequences of procrastination

Procrastination is associated with a range of negative behavioral and affective consequences (see Figure 5). For instance, in a study with undergraduate students taking a computerized introductory psychology course Steel, Brothen, and Wambach (2001) found significant negative correlations of procrastination with task completion rate, final exam grade, and course grade (see also Wolters, 2004; Vansteenkiste et al., 2009). Moreover, Pychyl, Lee,
Thibodeau, and Blunt (2000) found in an experience sampling study with undergraduate students that procrastination was negatively related to subjective well-being. In addition, students who procrastinate tend to experience higher overall levels of stress during a term compared to non-procrastinating students (Tice & Baumeister, 1997).

Taken together, we hypothesize that students who focus on the process of goal pursuit procrastinate less and, as a consequence, also report higher subjective well-being and higher task completion rates than students adopting an outcome focus. This should be especially true for students high in fear of failure. Findings by Freund and Hennecke (2012) support such an indirect relationship; they found that focusing on the process helped dieters to keep up with the diet after failure and achieve their desired outcome, and also contributed to their subjective well-being.

**The Present Research**

Two studies tested the following hypotheses: (1) Procrastination is negatively related to adopting a process focus. (2) (a) Fear of failure and (b) task aversiveness moderate the relationship between procrastination and process focus (see Figure 5). As a first step of testing these hypotheses, Study 1 used scenarios describing typical academic situations and asked students to rate the likelihood to procrastinate. Additionally, we assessed the associations between process focus and subjective well-being, life-satisfaction and physical health. Study 2, a short-term longitudinal study, assessed procrastination in a real-life study situation and tested if process focus decreases procrastination over the course of five weeks. The longitudinal design of Study 2 allowed taking into account that pursuing a goal – or failing to do so – describes a process that takes place over time. One important time-related aspect regarding procrastination is that a deadline helps reducing procrastination (Ariely & Wertenbroch, 2002). Study 2 investigated if the hypotheses of the proposed model hold over time with an approaching deadline.
Study 1

Study 1 used four scenarios describing typical tasks in an undergraduate student’s academic life. Students were sequentially presented with each task, subsequently rating their expected procrastination, goal focus, fear of failure, and task aversiveness for each scenario. The hypothesis was that participants who rate themselves as more process focused regarding a described task also expect to procrastinate less in the respective scenario.

Method

Participants and Procedure

The sample comprised $N = 92$ (85% female, $M_{age} = 24.86$ years) undergraduate psychology students at the University of Zurich, Switzerland. They were recruited via flyers and using a student mailing list. Students were invited to participate in the study “Behind the scenes” that assessed “their study habits and conditions.” Those interested in the study contacted the researchers via e-mail. They were then informed about the general purpose of the study, and received a link to an online questionnaire. After providing informed consent, participants were asked to read four scenarios students typically encounter in their daily academic life. Students were instructed to imagine themselves in the situations described in the scenarios. They then rated their expected procrastination, goal focus, fear of failure, and task aversiveness regarding that specific situation. Socio-demographic variables and subjective well-being were also assessed. Participants were fully debriefed and received partial course credit in return for participation in the study.

Measures

Academic scenarios. We presented each participant with four different scenarios describing typical tasks students face in their everyday lives: (1) Preparing a presentation, (2)

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4 We only report the measures that were relevant to the current study. We had also included other instruments, which were not included in the analysis and are therefore not reported here.
Part III

Preparing for an exam, (3) Writing a term paper, and (4) Working on a statistical assignment. One example for a scenario (“Writing a term paper”) is:

“Please imagine the following situation: It is the end of the semester so the deadline for your term paper – three weeks after the last day of class – is approaching fast. The only thing left to do in order to receive course credit is to write and turn in the paper. Fortunately, you already know how to write a term paper and have gathered most of the necessary materials. You have already taken all of your finals for this semester so you are now free to concentrate on writing the term paper.

If you have never written a term paper, try to imagine being in this situation as best you can. If you have already been in this situation, remember what it was like to be in this situation.”

These newly developed scenarios (see Appendix) correspond to typical course requirements of undergraduate students at the university. The scenarios resemble some of the “areas of academic functioning” in Solomon and Rothblum’s Procrastination Assessment Scale Students (PASS, 1984). To check if the scenarios were realistic, participants rated how easy it was for them to imagine themselves being in the respective situation (“How well can you imagine being in this situation?”) on a 7-point-scale ranging from 0 (not at all) to 6 (very much). Students reported that it was easy for them to imagine themselves being in the situations described in scenario 1 “preparing a presentation” (M = 6.63, SD = .84), scenario 2 “preparing for an exam” (M = 6.14, SD = .93), and scenario 3 “writing a term paper” (M = 6.05, SD = 1.08) but somewhat less so for scenario 4 “working on a statistical assignment,” (M = 5.92, SD = 1.12).

In addition, scenario 4 differed from the other ones when regarding the loadings of the independent variables of the four scenarios on their corresponding latent constructs. Factor

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5 In a pilot study with 20 participants, we ensured that scenario descriptions were representative for undergraduate psychology students at University of Zurich, Switzerland. The piloting participants rated the scenarios as well as the corresponding process and outcome items of the goal focus instrument as realistic.
loadings for all independent variables of the scenario “Working on a statistical assignment” were lower than convention for latent variable modeling suggests as satisfactory (Schumacker & Lomax, 2004), i.e., estimate <.48 for process focus, estimate <.37 for fear of failure, estimate <.21 for task aversiveness. Therefore, the scenario was excluded from further data analysis. In hindsight, we realized that this scenario was more concrete than the other three and referred to one specific subject, namely, statistics. All other scenarios were more abstract and allowed students to imagine the specifics as they best fit their everyday lives.

For the remaining three scenarios, we instructed participants to imagine themselves being in the described situation when they responded to the subsequent set of questions assessing procrastination, goal focus, task aversiveness, and fear of failure. If not noted otherwise, all responses were assessed on 7-point-scales ranging from 0 (not at all) to 6 (very much). Descriptive statistics for all measures included in Study 1 are displayed in Table 5.

**Table 5**

Descriptive Statistics and Correlations Among Variables Across the Three Scenarios in Study 1

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<tbody>
<tr>
<td>Procrastination</td>
<td></td>
<td>-.29**</td>
<td>.29**</td>
<td>.21*</td>
<td>.28**</td>
<td>-.25*</td>
<td>-.25**</td>
<td>-.04</td>
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<tr>
<td>Process Focus</td>
<td>-.1**</td>
<td>-.33**</td>
<td>-.27**</td>
<td>.25*</td>
<td>.23*</td>
<td>.22*</td>
<td></td>
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<tr>
<td>Outcome Focus</td>
<td>-.33**</td>
<td>.27**</td>
<td>-.25*</td>
<td>-.23*</td>
<td>-.22*</td>
<td></td>
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<tr>
<td>Fear of Failure</td>
<td>-.37**</td>
<td>-.34**</td>
<td>-.45**</td>
<td>-.27*</td>
<td></td>
<td></td>
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<tr>
<td>Task Averseness</td>
<td>-.11</td>
<td>-.26*</td>
<td>-.09</td>
<td></td>
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<tr>
<td>Affective Well-being</td>
<td>-.65**</td>
<td>.47**</td>
<td></td>
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<tr>
<td>Life satisfaction*</td>
<td>-</td>
<td>.44**</td>
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<td>Physical health+</td>
<td>-</td>
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</table>

| M       | 3.6 | 49.17 | 50.82 | 3.77 | 3.92 | 5.48 | 5.25 | 5.39 |
| SD      | .94 | 15.67 | 15.67 | 1.31 | 1.15 | 1.04 | 1.25 | 1.21 |
| Alpha   | >.83 | -     | -     | >.78 | >.76 | >.84 | -    | -    |

*Note. N = 92. *Only one assessment *p < .05. **p < .01
Procrastination. To capture procrastination in the academic context, we included 11 items of the 13-item Academic Procrastination State Inventory (APSI, by Schouwenburg, 1995, translated into German by Helmke & Schrader, 2000) and adapted them to each of the scenarios. A sample item is: “While I am preparing the presentation, I keep putting off the completion of the task.”

Goal Focus. To assess goal focus we adapted and modified a version of the goal focus questionnaire by Freund et al. (2010). We presented participants with 10 statements related to the specific topic of the scenario, e.g., to “preparing a presentation”. Half of the statements described the goal in terms of its means, (i.e., “to read papers related to my topic”), and the other half in terms of its outcome (i.e., “to perform well at the presentation”). Participants distributed 100 points among the 10 statements related to each topic of a given scenario to indicate how well the statements captured their representation of the respective goal. The number of points allocated to the process-related statements served as the measure of process focus.

Fear of failure. Fear of failure was indexed by averaging two items from the six-item fear of failure subscale of the APSI scale (Schouwenburg, 1995, in German translation of Helmke & Schrader, 2000), and was asked with regard to each of the scenarios. The items were: “When I think about … [topic of the scenario] …” (1) “…I have doubts about my own abilities;” (2) “…I experience fear of failure.”

Task aversiveness. Students indicated the perceived aversiveness of the task described in each of the scenarios on a two-item scale related to a scale by Pychyl and Blunt (2000, own translation and adaptation to the scenarios). Items were averaged per scenario and measured how unpleasant and aversive participants consider the tasks: (1) “How much do you feel like

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According to results by Helmke and Schrader (2000), the item “Experienced concentration problems when studying” loaded not only on the procrastination factor but also on the fear of failure factor and the item “Forgot to prepare things for studying” had a factor loading < .44. Hence, we excluded these two.
...[working on topic of the scenario]...?

(2) “How great is your unwillingness to...[work on topic of the scenario]...?”

**Subjective Well-being.** Subjective well-being was assessed on the affective level as positive and negative affect and on the cognitive-evaluative level as life satisfaction and subjective health. Affective well-being was measured with the four-item short version of positive-negative dimension of the multidimensional mood-questionnaire (Steyer, Schwenkmezger, Notz & Eid, 1997). Life satisfaction and subjective health were assessed with one item each: “All in all, how satisfied are you with your life?” and “How do you rate your overall physical health?”

**Results**

**Bivariate correlations of main constructs.** As can be seen in Table 5, Study 1 replicates the previously reported positive relationships between procrastination and fear of failure (Haycock, McCarthy, & Sky, 1998), and between procrastination and task aversiveness (Blunt & Pychyl, 2000). Procrastination was negatively associated with affective well-being and general life-satisfaction. As expected, process focus was associated with lower fear of failure, lower task aversiveness, and higher affective well-being. In addition, process focus was positively correlated with student’s general life satisfaction and their overall physical health.

**Data Analysis.** The associations between procrastination and the predictor variables were modeled on the latent level. The models were tested using structural equation modeling in AMOS (Arbuckle, 2007) with maximum likelihood estimation. Chi-square tests served to determine the model fit. Furthermore, the comparative fit index (CFI) and the root mean square error of approximation (RMSEA) were used. Regarding cut-off values for model fit, recommendations by Hu and Bentler (1999) served as orientation; they suggest CFI ≥ .95, RMSEA ≤ .06 for good model fit; in general, a CFI above .90 and RMSEA below .08 are considered acceptable (McDonald & Ho, 2002). In addition, the Akaike Information Criteria (AIC) was used to compare more complex with less complex models. Smaller values are indicators for a better model fit.
Part III

In order to obtain more reliable structural estimates of the relations between procrastination, process focus, and the moderators, we used scales pertaining to the three scenarios as indicators of latent constructs in structural equation modeling. To do that, we had to ensure that the different scenarios could be aggregated. Thus, in a first step, we conducted – for each scenario separately – a principal component analysis of procrastination, and assessed the loadings of each item on a single-factor of procrastination. Item loadings on the single-procrastination-factor for each of the three scenarios were > .40, with one exception of a loading of .30. As a consequence, we used each scenario’s procrastination factor attained from PCA to estimate the latent construct of procrastination. In a second step, the latent constructs of each of the predictor variables (i.e., process focus, fear of failure, task aversiveness) were estimated. Given that the predictor variable scales were not suitable to conduct a PCA due to the low number of items, we used the centered means of the respective scales of each scenario as indicators. In other words, each latent construct was indexed by three means, one drawn from each scenario. The loadings of the centered means on the respective latent constructs were all in acceptable range (> .72 for fear of failure; between .56 and .85 for process focus, and between .42 and .65 for task aversiveness).

In a third step, the latent interactions between (a) fear of failure and process focus, and (b) task aversiveness and process focus, were generated by using the product terms of the respective mean-centered variables, one for each scenario, as fixed indicators, following a procedure suggested by Li, Harmer, Duncan, Duncan, Acock, and Boles (1998).

**Latent Associations between predictors and procrastination.** To account for the relatively small sample size and to reduce model complexity, we first modeled the relation between procrastination, process focus, fear of failure, and the interaction term of process focus and fear of failure. We then repeated the analyses with procrastination, process focus, task aversiveness, and the interaction term of process focus and task aversiveness. For each of the
Fear of failure as a moderator of the relation of process focus and procrastination.

The central hypothesis was that students expect to procrastinate less when they report to adopt a stronger process focus concerning the academic scenarios. In addition, we expected, that focusing on the process of goal pursuit was especially beneficial for students high in fear of failure with regard to procrastination. The hypothesized model (see Table 6, Model 1) included fear of failure, process focus, and the interaction term of both ($X^2 = 60.56$ (df=48), $p = .11$; CFI = .96; RMSEA = .054).

Contrary to expectations, fear of failure did not moderate the relationship between process focus and procrastination across the three scenarios ($r = -.07$, $B = -0.003$, $SE = .01$, $p =$
We compared Model 1 to the less complex model including only fear of failure and process focus as predictors of procrastination (see Table 6, Model 2; $\chi^2 = 26.33$ (df=24), $p = .34$; CFI = .99; RMSEA = .033). The fit of Model 1 was not significantly better than the fit of the less complex Model 2 without the interaction term ($\Delta df = 24; \Delta \chi^2 = 34.23; p = .08$). Figure 6 displays Model 2 that best fit the data. As hypothesized, process focus was associated with lower procrastination ($r = -.34; B = -.03, SE = .01; p < .05$). Fear of failure was not significantly associated with procrastination ($r = .08; B = .05, SE = .1; p = .58$). Furthermore, results indicated that fear of failure was negatively associated with process focus ($r = -.44; B = -6.87, SE = 2.54; p < .01$).

**Figure 6.** Model 2: Structural equation model of fear of failure and process focus as predictors or procrastination (Study 1)

*Note.* Values represent standardized path coefficients. Ellipses represent latent constructs, and rectangles indicate measured variables. Circles (e) reflect errors or (rsd) residuals. PkFac = Factor of Procrastination per Scenario (S1 – S3); PFcn = Process Focus centered per Scenario (S1 – S3); FoFcn = Fear of Failure centered per Scenario (S1 – S3). *p<.05, **p<.01, ***p<.001
Task aversiveness as a moderator between process focus and procrastination. We expected that focusing on the process of goal pursuit was associated with higher procrastination for students who perceived the means of the task as highly aversive. To test this hypothesis, we created a structural equation model (see Table 6, Model 3) including task aversiveness, process focus, and the interaction of both ($\chi^2 = 79.24$ (df=48), $p < .01$; CFI = .88; RMSEA = .085). The interaction term of task aversiveness and process focus did not significantly predict procrastination ($r = -.40$, $B = -.02$, $SE = .02$, $p = .40$). We compared the interaction Model 3 to the less complex model pertaining only task aversiveness and process focus as predictors of procrastination (see Table 6, Model 4; $\chi^2 = 44.16$ (df=24), $p = .01$; CFI = .92; RMSEA = .096). The fit of Model 3 was not significantly better than the fit of the less complex Model 4 without the interaction ($D\chi^2 = 35.08$; $p = .07$). Figure 7 displays Model 4 that best fit the data. Process focus was marginally negatively related to procrastination ($r = -.28$, $B = -.20$, $SE = .01$, $p = .06$). Task aversiveness was negatively related to process focus ($r = -.36$, $B = -.42$, $SE = 2.03$, $p = .04$). Contrary to expectations, task aversiveness did not significantly predict procrastination ($r = .25$, $B = .23$, $SE = .14$, $p = .10$).
Figure 7. Model 4: Structural equation model of task aversiveness and process focus as predictors or procrastination (Study 1)

Note. Values represent standardized path coefficients. Ellipses represent latent constructs, and rectangles indicate measured variables. Circles (e) reflect errors or (rsd) residuals. PkFac = Factor of Procrastination per Scenario (S1 – S3); PFcn = Process Focus centered per Scenario (S1 – S3); TAcn = Task Aversiveness centered per Scenario (S1 – S3). *p<.1, *p<.05, **p<.01, ***p<.001

Discussion

Study 1 provides first evidence that a process focus is negatively related to procrastination in typical academic scenarios. This result confirms our central hypothesis. In contrast, the moderator hypothesis concerning fear of failure was not supported: Adopting a process focus seems to be helpful against expected procrastination regardless of how much one fears to fail in the given task. Although process focus and fear of failure were negatively correlated, the effect was not as strong as expected. One explanation could be that the scenarios do not evoke the emotional quality that is typically associated with fearing failure in an actual academic task.

Also contrary to expectations, the moderating effect of task aversiveness on the relation between goal focus and expected procrastination was not significant. This implies that students
who focus on the means of goal pursuit procrastinate less despite the aversiveness of the means. The negative correlation between process focus and task aversiveness, however, suggests that a process focus is associated with lower task aversiveness. In other words, students who perceive the task as highly aversive are more likely to focus on the outcome.

Before attempting to interpret these unexpected findings, we aimed at replicating these results using a different methodology in Study 2. Scenarios as the ones used in Study 1 have the advantage of being able to control the context but have the disadvantage of being hypothetical. Thus, one of the aims of Study 2 was to capture the experience of students during goal pursuit in a real life academic context. The second aim was the use of a within- versus between-person design (by incorporating time) to investigate the proposed model. Hence, we asked students to report their procrastination with regard to studying for an actual exam multiple times over the course of five weeks.

Study 2

Study 2 comprised a total of eight measurement occasions over the period of five weeks. Students who studied for finals of a lecture class in developmental psychology filled out an online questionnaire every two to three days starting six weeks before the exam. Despite a rich literature on procrastination in the academic context, there are only few studies investigating procrastination over the course of an action with more than three measurement points (Moon & Illingworth, 2005; Pychyl, Lee, Thibodeau, & Blunt, 2000). Hence, this study was designed to contribute to the understanding of the development of procrastination in a natural academic setting with students preparing for a real exam.

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7 The study contained three additional measurement occasions. The first was a pre-assessment one week before the actual study started, the second and third ones were post-assessments after the students took the exam. Data from these assessments were not included in the analyses and are therefore not reported here.
Part III

Method

Participants

A sample of $N = 50$ undergraduate students (82% females; $M_{\text{age}} = 25.36$ years, $SD = 7.85$) was recruited in a lecture class of developmental psychology. Students received extra course credit in return for participation in the study.

Procedure

After signing up for the study, participants gave informed consent and provided their email address in order to receive the subsequent questionnaires. The questionnaires were administered via a tool for online surveys (www.soscisurvey.com). As a reminder, participants received emails containing a link to each questionnaire.

During the five-week study period, every two to three days, participants filled out one of the eight online questionnaires assessing, in addition to other constructs not reported here, procrastination, goal focus, fear of failure, task aversiveness, and subjective well-being. Responses were given on scales ranging from $0 = \text{not at all}$ to $6 = \text{very much}$. Descriptive statistics for all variables and their inter-correlations are displayed in Table 7.
Table 7
Descriptive Statistics and Correlations of Measures Included in Study 2

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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Procrastination</td>
<td>-</td>
<td>-.26</td>
<td>.21</td>
<td>.37**</td>
<td>-.27</td>
</tr>
<tr>
<td>2. Process Focus</td>
<td>-</td>
<td></td>
<td>-.28*</td>
<td>-.36**</td>
<td>.06</td>
</tr>
<tr>
<td>3. Fear of Failure</td>
<td>-</td>
<td>.22</td>
<td></td>
<td>-.6**</td>
<td></td>
</tr>
<tr>
<td>4. Task Aversiveness</td>
<td>-</td>
<td></td>
<td></td>
<td>-.21</td>
<td></td>
</tr>
<tr>
<td>5. Subjective Well-being</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2.83</td>
<td>.68</td>
<td>&gt;.69</td>
</tr>
<tr>
<td></td>
<td>50.42</td>
<td>15.71</td>
<td>&gt;.85</td>
</tr>
<tr>
<td></td>
<td>3.21</td>
<td>1.25</td>
<td>&gt;.78</td>
</tr>
<tr>
<td></td>
<td>3.87</td>
<td>1.17</td>
<td>&gt;.82</td>
</tr>
<tr>
<td></td>
<td>4.82</td>
<td>.94</td>
<td></td>
</tr>
</tbody>
</table>

Note. Values based on aggregated data with N = 50 participants and a maximum of eight measurement occasions. *p < .05. **p < .01

Procrastination. As in Study 1, procrastination was assessed with the adapted 11 items of the Academic Procrastination State Inventory (APSI, by Schouwenburg, 1995; German translation by Helmke & Schrader, 2000).

Goal Focus. The measure of goal focus was the same as in Study 1. Of the ten statements referring to the topic “preparing for an exam,” five were process-related and five outcome-related. Participants had to distribute a total of 100 points among the ten statements. Higher scores indicate a higher process focus.

Fear of failure. In order to strengthen the measure of fear of failure, we doubled the number of items compared to Study 1 (resulting in four items) taken from the fear of failure subscale of the APSI scale (Schouwenburg, 1995; German translation by Helmke & Schrader, 2000). The two additional items were (1) “…I had panicky feelings while studying;” (2) “…I felt tense when studying.”
Part III

**Task Aversiveness.** Again in an attempt to strengthen the measure of task aversiveness, we added two further items to the ones used in Study 1. These items were also adapted and translated from the related scale by Pychyl and Blunt (2000).

**Affective Well-being.** Affective well-being was assessed in the same way as in Study 1, namely with four items of the multidimensional mood questionnaire by Steyer et al. (1997).

**Statistical Analyses**

To account for the nested structure of the data (i.e., eight measurement points at Level 1 nested within $N = 50$ persons at Level 2), we used hierarchical linear modeling (multilevel modeling) for analyzing the data and dealing with missing data on Level 1 (Bryk & Raudenbush, 1992). The hypotheses were tested by comparing a set of nested models following a hierarchical test procedure using HLM software. In comparing the nested models, parameters were estimated using the full maximum likelihood estimation (HLM, Raudenbusch & Bryk, 2002).

**Results**

Means, standard deviations, and zero-order correlations of the constructs are displayed in Table 7. For calculating correlations we aggregated the mean scores of the predictors across the eight measurement points. Replicating results of Study 1 and in line with previous research, procrastination was positively related to task aversiveness ($r = .37, p < .01$). Fear of failure was not significantly related to procrastination, but there was a trend for a negative relation between the two ($r = .21, p < .06$, assuming a one-tailed test criteria as the hypothesis was directional).

Following a hierarchical test procedure, we tested the improvement of every model with a likelihood ratio statistic. Table 8 shows a summary of all models tested. To predict procrastination on Level 1 we added, step-by-step and in this sequence, time (measurement occasion), process focus, fear of failure, task aversiveness, affective well-being, the interaction effect between process focus and fear of failure, and the interaction effect of process focus and task aversiveness. Finally, on Level 2 we added the mean level of procrastination centered
around the grand mean (Enders & Tofhigi, 2007) to account for individual level differences in procrastination.

Table 8

Results of Study 2: Multilevel Estimates for Predicting Procrastination

<table>
<thead>
<tr>
<th></th>
<th>Nullmodel</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Intercept</td>
<td>29.66 ***</td>
<td>33.41 ***</td>
<td>32.23 ***</td>
<td>30.34 ***</td>
<td>31.29 ***</td>
<td>63.96 ***</td>
</tr>
<tr>
<td>Measurement point</td>
<td>-8.08 ***</td>
<td>-10.39 ***</td>
<td>-11.16 ***</td>
<td>-10.61 ***</td>
<td>-9.9 ***</td>
<td></td>
</tr>
<tr>
<td>Process focus</td>
<td>-4.48 ***</td>
<td>-3.41 **</td>
<td>-3.61 **</td>
<td>-2.21 *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear of failure</td>
<td>2.83 **</td>
<td>.05</td>
<td>1.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task aversiveness</td>
<td>3.59 **</td>
<td>3.21 **</td>
<td>1.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective well-being</td>
<td>.06</td>
<td>-1.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procrastination</td>
<td>31.94 ***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean(^1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deviance ((-2\times\log(\text{lh})))</td>
<td>987.75</td>
<td>928.1</td>
<td>910.29</td>
<td>873.79</td>
<td>849.31</td>
<td>763.6</td>
</tr>
<tr>
<td>Diff Deviance ((\text{Diff}-2\times\log))</td>
<td>59.65 ***</td>
<td>17.81 ***</td>
<td>36.5 *</td>
<td>24.48 ***</td>
<td>85.71 ***</td>
<td></td>
</tr>
<tr>
<td>∆df</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reduction of prediction error(^2)</td>
<td>0.06</td>
<td>0.02</td>
<td>0.04</td>
<td>0.03</td>
<td>0.1</td>
<td></td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01, ***p<.001; \(^1\)Level 2 variable; \(^2\)Reduction of prediction error = 1 – Deviance of new model / Deviance of older model

Table 9 shows the model that best fits the data (AIC = Deviance + 2 * d = 791.579859

BIC = Deviance + d * log(N) = 787.117236). On Level 1, measurement time, process focus, and affective well-being were significant predictors of procrastination. This model shows significant variation in the individual slope of affective well-being, \(\chi^2(48) = 94.79, p < .001\). Task aversiveness emerged as a marginally significant predictor on Level 1. Fear of failure was not
Part III

significantly related to procrastination but nevertheless added to the model fit. On Level 2, the model included the grand-mean-centered procrastination as a significant predictor. Contrary to expectations but replicating the results of Study 1, the interaction of process focus and fear of failure did not significantly add to the prediction of procrastination. Moreover, the interaction of process focus and task aversiveness did not emerge as a predictor of procrastination.\(^8\)

**Table 9**

Results of Study 2: Multilevel Regression Analysis: Estimates of Effects Predicting Procrastination

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Coefficient</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interception</td>
<td>3.29</td>
<td>0.05</td>
<td>63.955</td>
<td>48</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean procrastination</td>
<td>0.90</td>
<td>0.03</td>
<td>31.942</td>
<td>48</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Measurement-point</td>
<td>−0.13</td>
<td>0.01</td>
<td>−9.901</td>
<td>376</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Process focus (vs. outcome focus)</td>
<td>−0.01</td>
<td>0.00</td>
<td>−2.207</td>
<td>376</td>
<td>0.03</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>0.03</td>
<td>0.03</td>
<td>1.039</td>
<td>376</td>
<td>0.30</td>
</tr>
<tr>
<td>Aversion of means</td>
<td>0.04</td>
<td>0.02</td>
<td>1.875</td>
<td>49</td>
<td>0.07</td>
</tr>
<tr>
<td>Affective well-being</td>
<td>−0.05</td>
<td>0.04</td>
<td>−1.172</td>
<td>49</td>
<td>0.25</td>
</tr>
</tbody>
</table>

*Note. N = 50 and a maximum of 8 measurement assessments. Bold values represent significant parameter estimates that are in line with the hypotheses. The full model included two levels, namely, assessments nested within persons. Dependent variable = Procrastination Level 1 comprised assessments: \(P_0 + P_1*(MZP) + P_2(GF_P_PRO) + P_3*(FF_TOTAL) + P_4*(TA_TOTAL) + P_5*(WB_TOTAL) + E\); Level 2 comprised persons: \(\beta_0 + \beta_0*PROKRA_Mittel + R_0\).*

**Discussion**

Replicating the central finding of Study 1 and supporting our main hypothesis, Study 2 showed that process focus was associated with reduced procrastination in the academic context. The more students focused on the process during the five-week study period, the less they procrastinated. Results also show that procrastination decreases over time and with an advancing

\(^8\) As assessments took place on weekdays and weekends, we added weekday as a Level 1 predictor of the model to account for possible effects on procrastination. The resulting model was not superior to the prior models, and weekday was no significant predictor.
Part III

deadline. The closer students were to the exam, the less they procrastinated, which is in line with previous research on procrastination (e.g., Ariely & Wertenbroch, 2002).

Again replicating results of Study 1 but contrary to the hypotheses, fear of failure did not moderate the relation of process focus and procrastination. Also contradicting our hypotheses, task aversiveness did not function as a moderator of this relation. Based on Study 1 and previous research, fear of failure and task aversiveness were expected to show strong relations with procrastination. Findings supported the relation for task aversiveness and showed a trend in the hypothesized direction for fear of failure. Note, that most of the previous studies that had shown an association of task aversiveness and procrastination used a cross-sectional design or comprised only two to three measurement occasions. The design of Study 2 allowed a much more fine-grained assessment, clearly going beyond trait-like assessments of task aversiveness, fear of failure, and procrastination used in other studies.

Failing to find a moderation effect can be due to several reasons, among them a low statistical power that either results from an insufficient sample size and/or from the reduced reliability of the product term (that also multiplies the unreliability of the predictors; Whisman & McClelland, 2005).

Another explanation for not finding the interaction between task aversiveness and process focus is that the measure of task aversiveness might reflect an overall evaluation of the situation of having to prepare for an exam rather than an evaluation of the individual means. Asking participants how boring or aversive studying for the exam was for them, might not have been sufficiently means-specific. A conceptual reason could be that students enjoy the means of studying more when they concentrate on the process rather than the outcome and find the materials interesting if they are not primarily associated with having to pass an exam. Finally, another alternative explanation could be that students use the effort heuristic and perceive highly aversive means as more effective to handle academic challenges (Kruger, Wirtz, Van Boven, & Altermatt, 2004). As a consequence, focusing on the somehow aversive means might have
motivated students to employ these means, and thereby might have prevented them from procrastinating.

**Concluding Overall Discussion**

Many of those who adopt a challenging goal find themselves procrastinating goal pursuit, perhaps due to struggling with fear of failure or unpleasant aspects related to the task. The main finding of the current two studies using different methods and study designs is that focusing on the means of goal pursuit is negatively related to procrastination. Contrary to our expectations, however, the association between process focus and procrastination did not change depending on the level of fear of failure or on the level of aversiveness.

Both studies replicated the finding that task aversiveness is related to higher procrastination. However, results were less consistent regarding the impact of fear of failure on procrastination. Interestingly, there is some debate in the literature regarding the role of fear of failure for procrastination, with some authors proposing fear of failure to be a reason for procrastination and others seeing it as an excuse for procrastinating (see, e.g., Schouwenburg, 1992; 1995; Haghbin, McCaffrey & Pychyl, 2012; Steel, 2007). This might explain why prospectively, fear of failure is not predictive of procrastination (Study 2), but it is when engaging in a hypothetical scenario imagining to procrastinate (Study 1).

Furthermore, Haghbin, McCaffrey, and Pychyl (2012) emphasize that it is important to consider possible mediators and moderators to explain the relationship between fear of failure and procrastination. In a study with university students, they found that the perceived level of competence moderated the relationship between fear of failure and procrastination. Procrastination was related to fear of failure only in students with a low level of competence. Note, that our procrastination model also assumes that perceived competence or self-efficacy plays a role for the relation of goal focus and procrastination.

We used the context of academic goal pursuit to test our procrastination model (Krause & Freund, 2013) because this is a context in which procrastination occurs frequently.
(Schouwenburg & Groenwoud, 2001). Note, however, that students in both of the current studies did not report high levels of expected or actual procrastination (i.e., ratings did not surpass the midpoint of the scale). This surprising finding might reflect the high value Swiss culture places on conscientiousness. On an anecdotal level, we can report that we attempted to experimentally induce procrastination and were unable to do so in a pilot study with $N = 10$ students who were asked to prepare three slides on a technical and uninteresting topic over the course of 60 minutes. Students were told that the experiment required them to stay for this amount of time in order to avoid them working very fast on the task in order to be able to leave the experiment soon. Students were left alone in a room that offered a number of distractions such as popular magazines, a computer that opened on the facebook site, beverages and snacks, etc. However, none of the students procrastinated working on the task. When discussing this phenomenon with students afterwards, they asserted that it would have never occurred to them not to comply with the experimenter's instruction to work on the task at hand. Similarly, in a master study on academic procrastination (Walter, 2009), we also found that Swiss students handed in their term papers well in advance of the deadline.

Thus, the current studies might underestimate the relations between goal focus, task aversiveness, fear of failure and procrastination because the academic context might not induce the levels and variation in procrastination needed to detect the hypothesized effects. Another reason for the lack of consistent support for the moderating role of fear of failure and task aversiveness could be methodological, as the sample size was rather small which might have resulted in low statistical power (Whisman & McClelland, 2005).

In sum, the current studies support the main assumption of our model that goal focus plays a role in predicting procrastination, both in hypothetical academic scenarios as well as in a real life context. Moreover, goal focus was not only related to procrastination but also to fear of failure and task aversiveness that also contribute to procrastination (see also Blunt & Pychyl, 2005; Solomon & Rothblum, 1984).
Implications

The knowledge gained from the present research can be highly valuable for planning and creating interventions in the academic domain. We agree with Carver and Scheier’s notion that an outcome focus, by providing a clear comparison standard between the actual and desired state of goal completion, can help to keep goal relevant actions on track (Carver & Scheier, 1998). However, the current research shows that focusing on the process of goal pursuit seems to facilitate successful goal pursuit in the academic domain because it is associated with lower levels of procrastination.

How can teachers and lecturers help students to adopt a stronger focus on the means of a goal? Firstly, they can attempt to create academic tasks and study contexts that make it easier for students and provide more opportunities to focus on the means of goal pursuit. McCrea et al. (2008), for instance, showed that more concrete representations of a task were associated with less procrastination (see also Freund & Hennecke, 2011). In the academic context, instructors could create a repository of resources, or a concept map, to make requirements and means for completing long-term assignments more concrete and clear. The second approach could be to highlight the availability of different means when introducing the students to the task. By having various means at their command, students can react more flexibly when they are not successfully employing certain means, because they can substitute them by other ones.

Limitations

Although we found the hypothesized effects of goal focus on procrastination, the current studies might underestimate the effect size due to the assessment of goal focus. In both studies, participants were presented with ten items, five of them referring to process focus and five to outcome focus. This instrument allowed to assess the relative importance of means and outcomes when thinking about a goal. At the same time, however, participants can only choose among the means and outcomes that are listed in the items. Although we had carefully piloted
the items in a small group of students, participants might employ different means or have other outcome-related aspects in mind than the ones listed in the questionnaire.

Another limitation is that we assessed but did not manipulate goal focus. An experimental manipulation of process and outcome focus would help to clarify the causal role of goal focus for procrastination. Note, however, that Pham and Taylor (1999) conducted an experiment using mental simulations emphasizing the means or the outcome of a goal. They report that students in the process manipulation studied more, experienced less anxiety, and achieved better grades than in the outcome manipulation (see Kruglanski et al., 2002 for similar findings). These findings show that a manipulation of process focus-related constructs seems to help self-regulation and facilitates successful goal pursuit but still needs to be shown for procrastination.

Conclusion

The current studies are the first to show that goal focus is related to procrastination. Focusing on the process of goal pursuit seems to reduce academic procrastination as proposed in our dynamic model of procrastination (Krause & Freund, 2013). The reported studies expand previous research by showing the robust beneficial effects of adopting a process focus in the context of procrastination, both cross-sectional and over time.
OVERALL DISCUSSION

Summary and integration of the findings:

Development and testing of a dynamic model capturing the role of goal focus for self-reported procrastination in the academic context

Part I introduced a dynamic model that describes the role goal focus plays for procrastination. The model is based on the idea that the cognitive representation of the goal in terms of its outcome or its means influences how much a person procrastinates, in particular promoting the main hypothesis that a focus on the process of goal pursuit is negatively related to procrastination. It argues that focusing on the process of goal pursuit helps to reduce procrastination through several characteristics: a process focus goes along with a more concrete goal representation, it renders the person more flexible after failure, keeps the attention on the means instead of the negative discrepancy between the actual and the desired state, and provides a “the way is the goal”- attitude that goes along with positive affect. Furthermore the model proposes that the two well-known antecedents of procrastination, fear of failure and task aversiveness, moderate the relation between process focus and procrastination. For students high in fear of failure, a process focus should be even more beneficial with regard to procrastination. Students who perceive the means of the task as highly aversive, however, are hypothesized to benefit more from focusing on the outcome instead of the process. In addition, the adaptiveness of process and outcome focus with regard to procrastination is characterized as dynamic as it is likely to change across an action phase (in the terminology of H. Heckhausen, 1989), when approaching a deadline. The model hypothesizes that students are more process focused during the non-urgent phase of an action and switch towards an outcome focus when the deadline approaches (urgent phase).

Before testing the model presented in Part I, the question arose how to best measure procrastination. Previous research reports modest positive correlations between trait-self-report measures of procrastination and actual behavior (Solomon & Rothblum, 1984). The correlation
Overall Discussion

of state measures of procrastination and actual behavior however remained open. Since the
dynamic model of procrastination presented in Part I refers to procrastination over time, in Part
II we investigated how a state measure of procrastination is related to a behavioral measure of
procrastination. We found significant moderate correlations between the behavioral measure, the
difference between planned and actual study time, and a state self-report measure of
procrastination. Furthermore we found that the self-report measure of procrastination was a
significant predictor of subjective well-being. We interpreted this finding as a form of validation
of the self-report measure as it reflects the construct of procrastination better than a behavioral
indicator that only predicts delay and not affect. Taken together, measuring procrastination on
the state level with self-report instruments was both viable and informative for reflecting
procrastination.

In Part III, we conducted two studies to empirically test the main hypotheses of the
model presented in Part I; a cross-sectional study using hypothetical academic scenarios (Study
1), and a short-term longitudinal study (Study 2). In Study 2 we employed the same state self-
report measure of procrastination evaluated in Part II.

We found support for our main hypothesis that process focus helps reduce
procrastination in both studies conducted in Part III. Moreover, in the second study of Part III
we found that the negative relation between process focus and procrastination replicates in a
longitudinal design. Specifically, students studying for an exam in developmental psychology
over the course of five weeks (nine assessments) and reported their procrastination and their
relative focus either on the means of studying or the outcome of studying. Part I furthermore
hypothesized that fear of failure and task aversiveness both function as moderators of the
relation between process focus and procrastination. These aspects could not be supported in the
Studies conducted in Part III.

In sum, we found evidence for the notion that a) a cognitive representation of the goal,
i.e., goal focus, plays a role for procrastination, b) process focus goes along with less
Overall Discussion

procrastination, c) results regarding moderator effects of fear of failure and task aversiveness on the relation between process focus and procrastination remain unclear and are subject to future research.

The causal relation of process focus and procrastination

The causal direction of the relation between process focus and procrastination, however, was not investigated in this thesis. As discussed in Part III, a manipulation of goal focus would bring clarity on the direction of the relation between process focus and procrastination. In the context of this dissertation we used short video-clips focusing either on the means or the outcome of goal pursuit to manipulate goal focus in university students studying for an exam. In another attempt to manipulate goal focus, we provided students with short writing exercises. They were asked to either write down three reasons why they studied for the exam, or three means in terms of how they studied for the exam. In a third attempt, we manipulated student’s believes in what is more effective for successful goal pursuit, process or outcome focus. All three attempts did not serve to successfully manipulate student’s goal focus. Note, however, that there were a few attempts in the literature to manipulate similar constructs. As described in Part III, work by Pham and Taylor (1999) found beneficial effects on student’s performance when working with a process simulation exercise. Fishbach and Choi (2012) successfully used writing exercises to manipulate their participant’s focus on either the instrumentality or the experience of goal pursuit.

In sum, the manipulation of goal focus, especially in real-life situations in the academic context, remains a challenge but would be worthwhile to support the hypothesized causal relation between process focus and procrastination, as of yet it is subject to further research.

Implications for Well-Being and Performance

The model assumes that well-being is an outcome of procrastination. In Part II we show that self-report measures of procrastination predict affective well-being. As we assessed procrastination retrospectively for the past days, technically, we predicted well-being at $T_1$ with
procrastination at T₀. Study 2 of Part III shows, that negative affective well-being is also a predictor of procrastination. The model presented in Part I assumes that well-being is positively related to process focus, more specifically that focusing on the means of goal pursuit increases well-being over time and thereby counteracts procrastination. For example, being positively reinforced by successfully employing and managing means related to goal pursuit goes along with positive affect (Freund, Hennecke, & Riediger, 2010). In Study 1 of Part III we replicated this finding. Students who reported to be process focused aggregated across all three academic scenarios, also reported higher affective well-being. We can conclude that affective well-being plays an important role for procrastination because positive affect, for example due to a focus on the process of goal pursuit, can be a means to help reduce procrastination. At the same time negative affect is an outcome of high levels of procrastination.

So far, we did not discuss performance measures as indicators of the adaptivity of process focus with regard to procrastination. The model presented in Part I assumes that the relation between process focus and procrastination impacts performance. In Study 2 of Part III, we assessed if student’s passed the exam. However, we did not find sufficient variance in the exam results to draw conclusions, as the majority of students passed and we had no data on individual performance differences, e.g., the number of correct answers in the exam. In future studies we wish to include performance measures to investigate consequences regarding the adaptivity of process focus.

The interplay of changes in procrastination and changes in goal focus across the life span

Another interesting question focuses on changes of procrastination across the life span and their interplay with goal focus. As discussed in Part I, the facilitation of goal success by promoting a process focus could be especially beneficial in student’s transition period from high school to university. In this period the requirement to self-regulate becomes increasingly important because students are expected to organize and regulate their academic work mostly on
Overall Discussion

their own, e.g., regarding when to start studying for an exam (Wild, 2000). Prior research by Freund, Hennecke, and Riediger (2010) showed that younger adults are usually more focused on the outcome of goal pursuit, but would benefit most from a process focus. Combining these findings with the findings reported in Part III, we propose that students who have freshly started studying at the university should procrastinate less when adopting a process focus. Facilitating the transition, the characteristics of process focus should help to balance out the challenges due to a lack of external regulation in the university context. We assume that the student’s ability to adapt to the more autonomous university context increases as they proceed through their academic careers. The question how procrastination develops after university and, further, across the life span remains open so far.

Thus, one future approach is the investigation of the influence age-differences in goal focus might have on procrastination. Prior research on procrastination has mainly focused on the academic context and, as a consequence, included mostly younger adults. Fewer studies in non-academic contexts, however, also show negative consequences of procrastination, e.g., during job search, in health prevention contexts or regarding tax payment (O’Donoghue & Rabin, 1999; Senecal & Guay, 2000; Sirois, Melia-Gordon, & Pychyl, 2003). Although relatively less attention has been given to procrastination in middle and older age (for a meta-analysis, see Steel, 2007), procrastination seems to be a lifelong topic.

Some empirical evidence indicates that procrastination changes across the life span (Steel, 2007). Theoretically, procrastination has been conceptualized as a failure in self-regulation, (Steel, 2007), and as older adults appear to become better in self-regulation self-regulation (e.g., Kanfer & Ackerman, 2004; Riediger & Freund, 2004), they are expected to procrastinate less. Linking age-related changes in self-regulation with propositions of changes in procrastination may require the identification of underlying mechanisms. Kanfer and Ackerman (2004) pointed out that age-related increases in crystallized intellectual abilities may compensate for concurrent declines in fluid intellectual abilities e.g. by using self-regulatory strategies that
optimize their knowledge and skills (p. 443). Furthermore, older adults have a shorter time perspective than younger adults (Lang & Carstensen, 2002). Construal level theory indicates that a shorter time perspective leads individuals to perceive a task as more urgent and, as pointed out in Part I, people are more likely to engage in task-relevant actions, hence, procrastinate less (McCrea, Liberman, Trope, & Sherman, 2008). In an initial pilot study during a scientific fair we investigated age-differences in procrastination and goal focus with $N = 261$ participants (age range: 19 – 81 years). Findings indicated that procrastination may decrease with age. These cross-sectional findings should be replicated in a longitudinal design.

We assume that the cognitive representation of the goal in terms of its means versus its outcome could be another mechanism that explains age-differences in procrastination. Freund, Hennecke and Riediger (2010) showed, in a four-month longitudinal study, that older adults (compared to younger adults) adopted a stronger process focus during the pursuit of personal goals. In Part III, we also obtained longitudinal evidence that young adults adopting a process focus procrastinated less. Extrapolating from these two findings, it is tenable that older adults procrastinate less than younger adults. Further, it is plausible that goal focus acts as a mediator for the relationship between age and procrastination. Future studies are needed to investigate these relations.

As a consequence of a broadened age-spectrum, however, it is advisable to test these predictions in goal domains other than the academic context. For instance, a process focus should help people to procrastinate less during their pursuit of personal goals, be they in the health, work, or social domain. Note, however, that in non-academic contexts the character of the goals might differ from the – often deadline-driven – goals in the academic world. It would be interesting to test the dynamic model in goal contexts that do not have a fixed deadline and are phrased as good intentions, such as “exercise more”, or that are formulated open-ended, such as “eating healthy”.
Overall Discussion

In sum, knowing the resources and strategies older adults employ to reduce procrastination may benefit the tailoring of interventions for reducing procrastination in younger and middle-aged adults.

**Implications for interventions to prevent and counteract procrastination**

Taking into account that procrastination is problematic for an increasing number of people (Steel & Ferrari, 2013), interventions are needed to counteract this behavior. This section shortly reviews prior interventions of procrastination. The dynamic model of procrastination presented in Part I can serve as a theoretical guideline to create and manage interventions helping against procrastination. Based on the results found in Part III, I will explain a design for an intervention centered around process focus in the academic context and offer ideas how process focus might be implemented in existing interventions. Finally, I draw an outline for future research and ideas on aspects of the model that might also enhance current intervention approaches.

**A goal focus intervention in the academic context**

Most interventions are developed for academic settings focusing on aspects such as self-monitoring, realistic goal setting, prioritizing, and time-management (e.g., Ferrari, Johnson, McCown, 1995; Schouwenburg, Lay, Pychyl, & Ferrari, 2004). Schouwenburg (1995), for example, proposes a 10-session structured training model (“doing it now”) that is based on typical antecedents of procrastination, such as low conscientiousness or high levels of anxiety, and uses self-monitoring, relaxation, managing of dysfunctional cognitions as techniques to stop procrastination. A newer intervention by Höcker, Engberding, Beißner, and Rist (2009) proposes a four-module training that focuses primarily on punctuality (e.g., regarding “starting on time”) and planning ahead. Turning to our model, what might an academic intervention based on the dynamic model proposed in Part I look like? The main message of the model is that process focus is negatively associated with procrastination. In a first module, students should be provided
with an image that conveys this main message. For example, a task or a goal, especially one that is difficult and lasts over a longer period of time, often seems like a high mountain (see also Freund, Hennecke, & Mustafic, 2012). Focusing on the mountain summit, i.e., the outcome of the goal, focuses the attention on how wide the gap is between the current state, for example standing at the beginning of studying for an exam, and the desired outcome, for example, being well prepared for the exam. Instead, focusing on the way to the mountaintop, i.e., the process of goal pursuit, draws attention away from the gap and instead emphasizes the options, the means, how to proceed (“the way is the goal”-attitude). At this point it is important to explain what means are (second module). Referring to the mountain metaphor, there are several ways to reach the mountain summit, e.g., walking, biking, hiking, climbing, etc. For the exam situation, means can refer to contextual factors such as where to study, (e.g., in a group with others or alone studying lecture sheets in the library), or to strategies for structure studying, (e.g., make a study schedule). Students should be encouraged to generate means themselves before engaging in goal pursuit. This should also serve to increase their self-efficacy beliefs.

In a third module, students learn how the characteristics associated with a process focus (i.e., flexibility after failure, concreteness, etc. see Part I) serve as strategic tools to counteract procrastination during goal pursuit. Procrastination does not only refer to problems with getting started, but often arises during the action phase, for example when a task is difficult, overwhelming, or exhausting. Students are “stuck in the middle” (Bonezzi, Brendl, & Angelis, 2011). The means associated with process focus provide students with options in case they encounter such problems during goal pursuit. In this case focusing on the process implies to change to another means, and students can be encouraged to substitute the problematic means with another means they have gathered on their list in the previous step.

Furthermore, students can be motivated to formulate the how, when and what of studying for an exam as concrete as possible. This notion taps into Höcker et al.’s (2009)
Overall Discussion

intervention module “planning ahead”. Procrastination is less likely the more concrete the goal is represented (McCrea et al., 2008).

In another module, students could be encouraged to understand how their emotions, for example fear of failure induced by focusing on the far away outcome of the goal too early during their study phase, contribute to their procrastination. They can be trained in increasing their awareness of this feeling, e.g., by self-monitoring techniques such as using a study diary where they protocol their affect. This would be in line with the aforementioned intervention by Schouwenburg (1995).

In addition, the main assumptions of the dynamic model described in Part I blend into prior approaches because they also highlight the importance to differentiate reasons for procrastination, i.e., fear of failure and task aversiveness, in order to determine the appropriate strategies against procrastination. The dynamic model makes distinct recommendations regarding the adaptiveness of the foci for these particular cases. In particular, when a student perceives the task as highly aversive, she is recommended to focus on the outcome of goal pursuit in order to procrastinate less, whereas when the student reports high fear of failure a process focus is more adaptive regarding reduced procrastination. Results from Study 1 and Study 2 of Part III, however, did not support these moderating effects so far. Further studies are needed before making distinct recommendations.

In sum, our theoretical approach in Part I might go past prior interventions by offering potential strategies throughout all phases of an action. For instance, interventions could be broadened by giving recommendations to counteract procrastination in the postactional phase, e.g., when delaying on looking up the result of an exam.

Implications for teachers and lecturers

Based on the intervention outlined above lecturers have several options to facilitate goal pursuit for their students and thereby prevent procrastination. One approach aims at highlighting the availability of certain means to reach the outcome and by helping students to increase the
number of means they have at their command (see also Part III of this dissertation). Another approach is to create a context that allows students to perceive the task as more concrete and encourage them to monitor which means they apply during goal pursuit.

**Interventions in the non-academic context**

To our knowledge there is little offered regarding trainings and interventions in the non-academic context and for non-student age groups (for exceptions, see Schouwenburg, 1995). This is not surprising as there is also only little research regarding these contexts so far. The aforementioned research with regard to other life domains, such as health or financial aspects (e.g., O’Donoghue & Rabin, 1999; Sirois, Melia-Gordon, & Pychyl, 2003), however, suggests that procrastination is a life-long problem. Anecdotally, we can report insights from our experience presenting research at a scientific fair, where an impressive number of people across all age-groups approached us, reporting to procrastinate to different degrees and asking for advice. Many of the interventional strategies to date could be easily adapted and offered for a non-academic age-diverse public. Internet-based learning as an online interventional technique might serve as a means to reach for example middle-aged adults who due to time restrictions could not partake in seminars or workshops. We hope that our research inspires the field to make an effort designing interventions suitable across all age-groups.

**Conclusion**

This thesis provides a theoretical framework and empirical support for the notion that process focus, the cognitive representation of a goal in terms of its means, helps to reduce procrastination. Considering behavioral, cognitive, and affective components of procrastination, we hope to further understanding of the phenomenon and contribute implications for improving interventions.
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Zusammenfassung

ZUSAMMENFASSUNG


Im Teil I der Arbeit wird ein dynamisches Modell entwickelt, das den Zusammenhang zwischen Zielfokus und Prokrastination in den Mittelpunkt stellt. Es basiert auf der Hypothese, dass ein Prozessfokus, also die Konzentration auf die Mittel der Zielerreichung, mit geringerer Prokrastination verbunden ist als ein Ergebnisfokus. Diese Hypothese ist gestützt auf die Annahme, dass Personen, die sich auf den Prozess fokussieren, ein Ziel als konkreter wahrnehmen, höheren positiven Affekt haben, nach Rückschlägen flexibler reagieren können, und sich weniger auf die Diskrepanz zwischen Ist- und Soll-Zustand und dafür stärker auf konkrete Schritte zur Zielerreichung konzentrieren. Das Modell nimmt eine dynamische Perspektive ein, indem es gut dokumentierte Ursachen von Prokrastination als Moderatoren der Beziehung zwischen Prozessfokus und Prokrastination einbezieht, und daraus auch Folgen für die Adaptivität des Zielfokus ableitet. So nimmt es beispielsweise an, dass ein Fokus auf die Mittel der Zielerreichung (Prozessfokus) besonders adaptiv ist, wenn hohe Versagensangst vorliegt, jedoch weniger adaptiv ist, wenn die Mittel der Zielerreichung als aversiv

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Zusammenfassung

Annahme zu einer möglichen Moderation der Beziehung durch Versagensangst und Aufgabenaversion konnte bisher nicht belegt werden, der Prozessfokus ging jedoch mit geringerer Versagensangst und mit geringerer Aufgabenaversion einher.

Die Ergebnisse der vorliegenden Arbeit integrieren ein dynamisches Modell um den kognitiven Fokus auf die Mittel versus das Ergebnis der Zielverfolgung als Prediktor von Prokrastination in die bisherige Forschung. Daraus werden Implikationen für Interventionsansätze und mögliche Bezüge zur Entwicklung von Prokrastination über die Lebensspanne abgeleitet und diskutiert.
Scenario 1 “Preparing a presentation”

“Please imagine the following situation as vividly and realistically as you can:
You are enrolled in a seminar. During the first class, the course topics are introduced. The instructor asks the students to sign up to give a presentation on a certain topic. This assignment will be graded. You sign up for a topic and write the date of your presentation in your appointment book. You already have the readings that you are to use to prepare your presentation.

If you have never had to prepare a presentation for class, try to imagine being in this situation as best you can. If you have already been in this situation, remember what it was like to be in this situation.”

Scenario 2 “Preparing for an exam”

“Please imagine the following situation as vividly and realistically as you can:
It’s the middle of the semester and you are enrolled in several classes. In some of them, there will be a final exam at the end of the semester. You know what readings will be on the finals and have bought the lecture notes. They are on your desk, waiting to be read. In order to pass your finals, you will have to study for them concurrently because you have to take several exams. Finals won’t begin for a few weeks.

If you have never needed to study for a final, try to imagine being in this situation as best you can. If you have already been in this situation, remember how it was and what it was like to be in this situation.”

Scenario 4 “Working on a statistical assignment”

(not included in analyses)
“Here is another situation. Please imagine it as vividly and realistically as you can:

You are taking a mandatory statistics class that you need to pass to get your degree. So, it is important that you don’t fall behind and that you pass the final exam. This week, there is another homework assignment. Its purpose is to help you apply a complex formula to a dataset. You have already installed the statistics program you’ll need to complete the assignment on your computer and you have all the materials you need.

If you have never worked on a statistics assignment, try to imagine being in this situation as best you can. If you have already been in this situation, remember what it was like to be in this situation.”
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