The Psychology of Procrastination: Why We Delay and How to Overcome It

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Abstract

This research examines behavioral side aspects of procrastination. Procrastination is defined as intentional behavioral delay for more than intended. Procrastination is primarily measured self-reportedly, and it is typically phrased "to put off action until later." It is pointed out that self-reported procrastination may introduce a number of problems because the actual behavior may not be reflected. Since surveys of the main construct in procrastination research are typically far removed from actions, they may not actually be procrastination questions, situations or events. Such a reliance on self-reported, off-line, retrospective questions may bias results. As such, procrastination research is said to have gone astray by focusing on self-reported measures instead of behavioral delay. Still, objective behavioral measurements of procrastination are difficult to obtain and establish in the real world. Meanwhile, since procrastination occurs during task commencement, during the implementation phase right after task formulation, it is argued that a shift from the planning to implementation phase of action may yield behavioral delay in procrastination settings. A brief examination of behavioral delay measures in procrastination followed here is suggested.

For procrastination to take place, there must at least be a discrepancy between the behavioral intention to act in a certain way and the corresponding behavior. Since procrastination is defined as intentional delay, it is action possibility that is naturally ensuing. Such a viewpoint, however, is absent in the self-reported, offline conception of procrastination. This is somewhat paradoxical, given that the structural definition refers to behavioral absence during opportunity. Since self-reported procrastination focuses on the task formulation phase of action and its behavioral delay aspects are more deeply embedded in behavioral delay per se and the resulting consequences, it is plausible that a greater realization of procrastination would be to focus on behavioral measures of procrastination (Svartdal et al., 2018).

Keywords: Procrastination, Social psychology, Action Control, Impulsiveness, Delay Engagement Models, Temporal Discounting

1. Introduction to Procrastination

Procrastination, the partial or complete avoidance of an intended action or behavior, is a widespread phenomenon experienced by many individuals in their everyday lives. Such practical examples of procrastination demonstrate the difficulty of bringing a task to action, despite an intention to act. The intentionality makes procrastination an active avoidance behavior. Actions or behavior that are intended to be carried out are less functional than inaction. This reflects not only the feigned missingness of time-scheduled planned behavior. The choice of inaction can mean a switch from adaptive behavior to avoidant behavior and relate to self-control problems. Unless intended actions are not executed, this may be a behavioral delay from a coping perspective. Procrastination is related to adverse states and conditions and

problems such as increased stress, lower task performance, reduced wellbeing, regret and suffering, and an increased risk of mental and physical illness. Given its symbolic importance, research has been drawn to understanding why people put off essential or important behavior. By establishing an understanding of procrastination's origins and mechanisms, possibilities for offering new or improved interventions are made available. Such opportunity for intervention may be conceptualized and measured in many ways. Research in the area of procrastination has moved past a clear majority of studies focused on individual differences and beliefs and towards a technique-focused approach.

Conceptualization and measurement of procrastination, i.e. determination of what procrastination is, have merely focused on what is essential for self-reported procrastination. The number of studies focusing on behavior in procrastination research is regrettably scarce. Relying solely on self-reported procrastination puts results at risk of bias resulting from the troubled correctness of self-reports. In the present paper, the aim is to bring back behavior into the procrastination equation by focusing on behavioral delay—the time passed from the happening of the event that opens up a possibility for action until action is preempted and/or expressed. More precisely, behavioral delay is meant as the amount of time spent on an action prompting event until a behavioral response to the action prompting event has been expressed. Such a behavioral change leads to a change both in knowledge (the response is processed in memory) and in the state of the environment (the focus of interest is attended to). Behavioral delay, with the selected focus on approach delay, adds to their perspective the behavioral 'how'—the temporal progression of behavior—is emphasized. Research efforts emphasizing how people behave when procrastinating focus on the behavioral 'how' rather than the cognitive 'why' ( ). The belief perspective may be broadened to include any thought or belief related primary construct, but still, behaviors are left unexamined. A theory based on actively avoiding behavior is put forward to widen the situation experiencing construction arena and more substantive taking in the current neglect of behavior. The choice of inaction as a response to an action prompting event defeats its adaptive purpose of action, rendering inattentive self-control nonfunctional. Such behavioral basis for procrastination, not merely letting go or passive abandonment of intended action or behavior, is presented as a matter of perspective and wording: behavior might be absent but still unpackaged action intention and planning.

2. Theoretical Frameworks

There are diverse theoretical accounts of procrastination. This study rests on the proposition that a productive approach to understanding procrastination requires considering the provide minimal (necessary and sufficient) features of the phenomenon as opposed to attempts to explain procrastination phenomena broadly. Perhaps because earlier discussions of procrastination conceivably lacked detailed empirical consideration, procrastination has been left rather fuzzy in terms of definitions and conceptual analyses . As a result, diminished precision in the identification of both procrastination as a concept and procrastination instances has prevailed. Thus, behavioral delay – the optimal place to begin, since procrastination is deliberate, active delay – is characterized as procrafinaotyping behaviors characterized by not occurring given a plan.

There have been very few, if any, empirical tests of competing conceptualizations of procrastination in terms of their ability to deliver on these basic expectations of a robust procrastination measure. Nevertheless, the over-reliance on self-reports or other methods of presumed delay messages signifying procrastination is considered an unfortunate state of affairs, and so theorizing in terms of postulated or self-reported procrastination should be taken at face value and examined against the difficulty of their translation into behavioral equivalents. Explicitly shifting the treatment of procrastination from postulated self-reports of procrastination toward implementation phase behavioral delay is timely and noteworthy. Importantly,

such a shift has the benefit of better grounding the procrastination experience in the procrastination scenario, and can serve to redistribute the empirical effort necessary to scrutinize the diverse theoretical rivalries accounting for the phenomenon.

2.1. Cognitive Behavioral Theory

The cognitive behavioral theory (CBT) of procrastination emerges from the fact that problem behaviors in the form of avoidance, including procrastination, typically maintain themselves in a negative reinforcement process for a time . Procrastination might end up being harder to change than originally intended and may become compounded across a lifetime in ways that significantly lessen the quality of life. Thus, CBT may help individuals who suffer from procrastination to use self-learning exercises and therapeutic sessions to implement more constructive coping responses to their procrastination habits. CBT generally focuses on evoking motivation to change for the better by describing the positive impact of change and the negative cost of continuance. Self-criticism is often the central approach to stimulating motivation in the clinical workshop. It is argued here that a different angle may prove equally effective and potentially more motivating concerning procrastination in particular. These two alternative directions follow the notion of the functional nature of avoidant behavior. Accordingly, CBT is presented in this brief context.

CBT reasoning about procrastination typically begins by characterizing the problem as having a deluded motivational belief. Similarly, societal assignments often make one feel “like an imposter.” Self-reproaches or external reprimands for procrastination often emphasize doing things that one has to do or changing themselves to become less procrastinating. With apologies to the proverbial bird, CBT invites the procrastinator to reflect on the longer-range proactivity they may well prefer to pursue: why don’t they “fly right?” That is, what bothersome consequences have they found coming into their life? What negative feelings has procrastination given rise to? This understanding is particularly motivating for procrastinators’ “grand projects” in their self-reflective life project. Which preferencing anticipations of pleasant acts have been delayed? What broader fears, since they typically try to avoid feeling bad or missing out on rewards, have links to this behavior? What intrusive thoughts accompany delaying selection of an action? What finer grained fears of worsened conditions when starting are there?

2.2. Psychoanalytic Perspectives

The psychoanalytic explanation for procrastination is rooted in the mind's internal battle. The rational mind is pitted against the mood mind, where the two systems are unable to work together in harmony. The rational mind wants to act, while the mood mind has an opposite motivation, wanting to feel better before the task is done. The mood mind creates a contemptible set of thoughts to keep a person from moving forward, creating anxiety over the task and a feeling of hopelessness after failure to act. The mind makes this feeling worse by telling a person that they are stupid for having procrastinated. The rational side of the mind eventually comes to realize that even after a shift of mood, it still has to take care of the task, creating a difficult feedback loop of thoughts and feelings that often remain unresolved (Svartdal et al., 2018). The unwanted intrusive thoughts which accompany procrastination may also be infused with feelings of anxiety and guilt, and these thoughts are likely to persist until action is taken. To deal with these feelings, individuals often escape further into a darker mood. Once action is taken on a task, these dark thoughts tend to lift or disappear, while the fleeting positive feelings associated with ongoing action or completed tasks may also contribute to a reduction in motivation and effort, which may then lead to postponed deadlines or a lowered quality of work on later tasks.

2.3. Behavioral Approaches

1. Introduction 2. Theoretical Approaches 2.1. Cognitive Approaches 2.2. Personality-Based Approaches 2.3. Behavioral Approaches 3. Implications for Procrastination Research and Practice 4. Conclusion

2.3. Behavioral Approaches Behavioral approaches to procrastination assume that procrastination consists of an established behavioral pattern that leads to dysfunctional postponement . Hence, the focus is on behavioral performance and behavioral regulation. A common behavioral model of procrastination builds on self-regulation theory. According to this perspective, procrastination occurs because individuals fail to effectively self-regulate goal-directed actions. This self-regulation failure may be the result of failure to plan, difficulties in goal-setting, disruptions in goal-directed action, lack of task engagement, or deciding not to act or withdrawing resources. Another behavioral perspective on procrastination is an operant perspective on avoidance behavior. This perspective assumes that negative consequences of completing a task produce avoidance behavior towards the task. As an example, assuming that submitting an essay will lead to negative consequences, avoidant behavior such as starting up late leads to avoiding the essay.

There are a number of potential gaps and limitations in behavioral approaches to procrastination. A concern may be the lack of behavioral measurement of procrastination, hence relying solely on self-reported procrastination variables. Procrastination is a delayed behavior or a decision not to act, while a plethora of self-reported questionnaires focus on procrastination triggers such as cognitive style, coping mechanisms, or personality traits. However, there are only a few self-observational behavioral measures of procrastination by diary protocols measuring behavior in situations where individuals have at their disposal the ability to commence procrastination-inducing behavior. Procrastination involves an awareness of, not a determination of, the performance of intended behavior. The absence of behavioral measures in this literature may introduce a methodological issue across research articles on the topic.

3. Types of Procrastination

A common experience in life is delaying a task as the deadline approaches. This might be a group research paper that is ideal for team members to work a few days early on, but it is often just tidied up right before the class in the last minutes. It could also be a plan to get healthy by going to the gym regularly. All of this will remain on the To Do list until the vacation day arrives the week before New Year. Even when there's no deadline looming, procrastination could be delaying a plan to acquire a new skill, a fun trail, or visiting an inspiring art exhibition. It might be due to various reasons such as fear of success or perfectionism, impulsiveness, lack of time management, overwhelming feelings, or general lack of motivation (Svartdal et al., 2018). For the sake of clarity, it is important to distinguish between postponement and procrastination. Someone might plan to go back to the gym early after summer vacation, but this delay is quite reasonable. This example is not procrastination because there was a choice to schedule it later. Procrastination is characterized by sulking oneself into doing unimportant activities rather than an important one that was previously planned to be done now. This type of self-regulation failure often leads to a short-term feeling of relief but a longer term of humidity producing a haze of regret and guilt. A taxonomy is proposed that, instead of focusing on the reason and solution of procrastination, classifies it based on the mode (active vs. passive), duration (momentary vs. ongoing), and object (specific vs. generalized). Active procrastination could help private life, but it hardly improves well-being in academia where students tend to actively procrastinate to check promptly overdue tasks. An ongoing delay or forgetting a task might be due to personal characteristics like lack of conscientiousness in general, nature of a task like a boring cleaning chore, or easily distracted by daily life elements. This type of procrastination, especially in academia, is less studied but it is practical to improve productivity on a short-term and this is what needs to be solved in prioritizing procrastination solutions after the pandemic.

3.1. Active vs. Passive Procrastination

Traditionally, procrastination was considered to be a straightforward, unitary behavior wherein people who procrastinate choose to not act. Research expanding upon this definition demonstrates that not all procrastinators are the same and that procrastination is a more complex behavior than it was originally conceived. (H. Zohar et al., 2019) This type of procrastination is associated with characteristics of someone who is both prepared for and willing to undergo the burden of stress that would accompany a short time frame to perform a task. It is believed that such procrastinators reorganize their focus so that a short time before the deadline is allocated for the task. Unlike AP, passive procrastination (PP) entails a lack of regulating behavior on one's own. This type of procrastination is not premeditated and reflects a failure to initiate action. Thus, there is an assumption that passive procrastination is a negative cycle in which one delay and fails to act which leads to failure and negative self-evaluation. An initial finding supported the notion that active and passive procrastination differ in these maladaptive/adaptive domains. Further, most procrastination tendencies do fall in the suboptimal range, although there are subtypes of procrastinators who harbor conflicting beliefs about situational control and use different behavioral strategies: inaction vs. buffering/contingency planning.

3.2. Situational vs. Chronic Procrastination

Different meeting refer to different causes for procrastination, which can be grouped into two broad categories: situational and chronic (Yan & Zhang, 2022). Situational procrastination refers to a behavior which is exclusive of a specific task, whereas chronic procrastination denotes a broader pattern of behavioral delay that applies across tasks and situations, often interfering with the affected individual's functioning. Situational procrastination may be illustrated by the examples of individuals who commonly complete their tasks in advance, but who might postpone meetings and presentations, thus leading to a "last-minute scramble" toward deadlines and a rush to finish. Such non-professional, or at least semi-acceptable cases of procrastination are generally attributed to temporary situational or environmental impediments to efficient task completion, such as a heavier workload than anticipated, or a sudden unavailability of some resources on which task completion is dependent (Svartdal et al., 2018). Similarly, chronic procrastination may be illustrated by the case of individuals who continually postpone start of their homework until late in the evening, or even the next morning, leading to poor grades and other consequences of general academic impairment. Chronic procrastination typically appears as a more detrimental variant of soft procrastination which ultimately results likewise in poor task completion and other consequences. Regardless of which particular tasks are involved, chronic procrastination tends to signify a stable pattern that applies across systematically different types of tasks. It is conceivable that a person might be a situational and a chronic procrastinator, but it would be less likely for an individual to exhibit the opposite combination. It would be generally expected that persons who are chronic procrastinators would also be frequently procrastinating or delaying a wider variety of tasks and behaviors, but this problem remains unexplored. The dimensionality and measurement of neurotic or chronic procrastination in a pressing evaluation situation would be inherently difficult. However, this still would generally give rise to the need for more specific and measured evaluations of procrastination tendencies within the domain of academic learning, restaurant behavior, or another perspective.

4. Psychological Factors Contributing to Procrastination

Most of the research on procrastination has focused on why people delay. In response to calls for future research measuring whether procrastination increases or decreases performance, this research questions whether procrastination affects performance. An explicit test of Temporal Motivation Theory is presented. Besides expectancy and value, the importance of sensitivity to time related variables is demonstrated. Results suggest that expectancy, value and sensitivity account for approximately 57% of the variance at the

trait level. Furthermore, these variables exert their effect on observed delay in performance through procrastination. Initial cross sectional data are presented showing that procrastination is most strongly predicted by poor self-regulatory skills. These provide some understanding of the vicious cycle created by procrastination. A longitudinal study with 236 participants is presented that follows temporal motivational variables and procrastination in a naturally occurring context over a 10 day period, providing some insight into the cause and effect relationships. Finally, a specificity approach to procrastination is employed to examine whether procrastination is most detrimental in special circumstances. Moreover, it is examined whether people low in procrastination function differently from those high in procrastination on the time related variables (Steel et al., 2022).

Research suggests that procrastination is defined as voluntary postponement of a task, despite expecting to be worse off for this delay. Earlier research focusing especially on perfectionism being the cause of procrastination is critiqued. The extent to which prevalent definitions and theories include time, affectivity and self-regulatory aspects is also examined. A complex view on procrastination distinguishes between personal dispositional tendencies and behavioural task delay. Researching intentions and goal characteristics provides better insight into the cause of procrastination, especially the competitive motivational task characteristics effect predictions parameter, value and sensitivity on performance.

Procrastination is defined as the voluntary delay of intended actions, despite expecting to be worse off for the delay. Historically, with the exception of a few isolated studies, procrastination has been ignored by the psychological community. Some researchers totally disregard phenomenological issues, while others emphasise personal or attitudinal reasons such as being overly perfectionistic. However, both these perspectives completely disregard the importance of self-regulation. Some idea is provided of how affecting issues are dispersed into different research camps, which largely ignore one another. Furthermore, the need to integrate research streams in motivation and procrastination is highlighted.

4.1. Fear of Failure

Academics often do not feel like they are in control of their educational careers and find themselves saying, “I’ll do it later” or “I’ll do it tomorrow.” However, last-minute submissions of essays, projects, or study in a desperate quest for a passing grade usually don’t match professors’ expectations. The word procrastination refers to the voluntary delay of an intended action, which can be aimed at different actions or tasks of which the start or completion is often postponed or delayed. Procrastination manifests as a time and task management problem and usually involves non-optimal disorder in priority setting, time structuring, or pacing tasks. Vast and widely varied research has focused on exploring the reasons behind procrastination, partly inspired by how exasperatingly malicious procrastination can be. Procrastination usually includes a troubling desire to postpone an action, which typically intensifies over time. Nevertheless, procrastinators often are aware that this putting-off behavior is not advisable: They may acknowledge it to be a source of trouble or even serious harm. They may also know intuitively that they should start earlier or work harder. Academic procrastination is one form of the widely experienced psychological phenomenon of procrastination, and it specifically involves avoiding academic responsibilities such as studying for exams, completing homework assignments, writing papers, or even asking questions in class. Related to time and task management issues, it can have negative consequences for students ranging from missed deadlines to negative evaluations of submitted work (Thakkar, 2009). Academic procrastination appears to be related significantly to socially prescribed perfectionism. Specifically, Dr. students seem to feel an implicit pressure from their peers and professors to produce very good ideas and research on the very first try. As a result, students develop an irrational belief that it is important for them to feel that their performance will be perfect or very good. They will experience distress if they feel that people think their performance will be

anything less than perfect or very good. They consequently experience thoughts that they must be perfect, and that they have to be even better than good. This socially-prescribed perfectionism may lead to procrastination. Thus, procrastination is viewed as a reaction to socially-prescribed perfectionism. This type of perfectionism seems to be a vicious cycle because procrastination indirectly fosters negative self-evaluation thoughts. The belief that one's research is flawed fosters negative feelings, which causes experiencing even more negative thoughts, which may lead to further procrastination. Socially prescribed perfectionism appears to be a significant factor in the procrastination of Dr. students. On the other hand, however, many studies began refuting fear of failure as a valid cause of procrastination. The only manifestation of fear of failure that is even weakly related to procrastination is socially-prescribed perfectionism. However, only 7% of people in an open-ended questionnaire on procrastination listed perfectionism as a reason for their procrastination. In light of this, other motivational factors were delved into. In these studies, procrastination is seen as the result of nonautonomous form of regulation in the academic fields. People who aren't motivated or are motivated by external conditions will wait until the last minute when they feel pressured to act.

4.2. Perfectionism

Many people procrastinate when working on everyday tasks, as they intentionally delay execution on an important task. Procrastination translates into poor productivity and increases stress and anxiety. In an academic setting, procrastination is often fueled by perfectionism, a personality construct in which individuals set unrealistically high standards for their work. In college students, perfectionism is understood as two dimensions, which have been termed positive and negative perfectionism. This study endeavors to explore the nuances of this relationship, focusing on the traits of conscientiousness in each perfectionism type, affecting fears of negative evaluation, and examining how the clarity with which one predicts the future temporally engages procrastinators. Perhaps answering why it is that some individuals strive for high standards on each task and proactively seek additional time to ensure flawless work, while others experience anxiety when avoiding demanding tasks ((Echols, 2016)).

Negative perfectionism as a trait relates to procrastination, and that positive perfectionism does not sabotage task commencement. Conscientiousness, a desirable trait, relates to achievement and productivity but has a nuanced structure that should relate to task-oriented procrastination, operationalized as a lack of effort in one's work. Negative forms of evaluation should relate to extreme concerns about doing poorly on a task, which would then be perpetuated by avoidance such that one is not exposed to unfavorable feedback on performance. Positive temporal orientation should relate inversely to procrastination, conceptualized as how an individual keeps track of time ripples into task approach. The dimensionality of perfectionism should be encompassed within two types, one adaptive and one maladaptive.

The adaptive or positive version reflects the proclivity to hold high standards for oneself; its pursuers experience pride and satisfaction in their accomplishments, often going above and beyond the requirements ((Stoeber & W. Eysenck, 2008)). Here, procrastination is arguably not an issue, as individuals understand how long a long task may take and bundle in additional time to avoid crippling time-constraint anxiety when the deadline approaches. The maladaptive or negative version, on the other hand reflects the proclivity to hold excessively high standards for performance; internalized pressures lead to extensive cognitive rumination so that none of the individual's goals or aspirations are felt to be good enough.

4.3. Low Self-Efficacy

As a psychological construct, self-efficacy refers to one's beliefs about one's capabilities to organize and execute the courses of action required to produce given attainments. Self-efficacy for self-regulated learning

refers to students' beliefs about their capabilities to plan, monitor, and evaluate their learning. Students with low self-efficacy for self-regulated learning give up easily and display low task persistence, effort, and interest. This self-efficacy is a key predictor for students' academic performance and was posited as a source of procrastination. Few empirical studies have tested the relationship between self-efficacy for self-regulated learning and procrastination. This study found that self-efficacy for self-regulated learning, as an individual difference variable, accounted for a significant portion of the variance in frequency of academic procrastination even after age, gender, and academic performance were controlled.

This study and many others indicated a significant negative relationship between self-efficacy for self-regulated learning and procrastination. That is, as self-efficacy for self-regulated learning increases, procrastination decreases. The temporally dynamic and motivational processes underlying this relation were further explored. Procrastination was assessed as a lower-order construct measured by within-domain and between-domain procrastination in the context of academic and non-academic domains. Task aversiveness was implicated as a more original reason for procrastination. Theoretically, procrastination involves voluntarily choosing one task over another; thus, the nature of the task contributes to procrastination. The explanation of this reason reflects various psychological models. The reason for the delay, though recently debated, is based on the timing of rewards and punishments. The brain tends to value certain outcomes more than uncertain ones even if the uncertain outcomes may lead to more gain.

4.4. Decision Paralysis

Procrastination is often viewed as a type of self-regulatory failure associated with a preference for the smaller, more immediate rewards over larger, more delayed rewards (R. Zentall, 2021). However, not all delays are procrastination. For some individuals, holding off on a decision for longer than prescribed may actually maximize utility, especially with ongoing processing that may change the relative evaluation of the alternatives. Until recently, procrastination had been studied mostly from the behavioral consequences rather than on the decision process itself. Procrastination arises when an initial decision triggers an ongoing delay in the next decision rather than an immediate decay of value (Svartdal et al., 2018). Such a sequence leads to decision paralysis within a given interval, which can be resolved either by spontaneously moving toward an unhelpful decision or expiring the earlier proposals. Procrastination is a typical behavior common to everyone. It is defined as delaying or avoiding tasks that need to be accomplished, regardless of the reason behind the need to delay it. It is a behavior that affects health, sleep, education, studies, job performance, and mental well-being in general. Furthermore, procrastination has been studied in many fields including social science, health, education, media, and gaming. Furthermore, in the field of health, it plays an important role in acquisition and shedding of health habits. A lack of consideration has been given to it in the study of health-related behaviors. Distinction in kinds of procrastination has been made: Academic Procrastination, Procrastination at Work, and Procrastination of Homework. Consequently, different types have different behavioral, cognitive, emotional, and environmental correlates. Though procrastinators tend to be conscientious, they are more susceptible to stress. A weak self-compassion is a significant risk factor for emotional response. Sex and age were shown to correlate significantly. Different performance outcomes were related to different kinds of procrastination. Additionally, evidence for difference in the cognitive-behavioral population of various types was found. While a few have modified previously existing tests that haven't been widely used, a vast majority has adapted existing procrastination scales/methodologies into their own languages. Two scales have been translated and validated in Norwegian and Swedish. Factors that influence procrastination, such as feedback, personality traits, future consequences, information network, response speed, and other contextualized or cultural group variables have been studied too. Delay discounting tasks, discounts tasks of simple choices with considerable amounts of money, have been used to study its effect on motivation and behavior, and variation in amount and

duration of the offered rewards have been systematically altered. There is substantial evidence supporting the hypothesis that across societies, cultures, and contexts, a tendency towards present-future decision conflict causes procrastination behaviors.

5. Emotional Factors and Procrastination

Although many theories of procrastination have focused on individual factors related to temporal preferences or delay discounting (Steel et al., 2022), it is now increasingly recognized that procrastination is closely related to more emotional factors (Visser et al., 2018). This emotional association was themselves further elaborated. Theories propose such an emotional link between procrastination and discomfort, other-cost, and self-cost. There are both cause-procrastination (or precursor) and consequence-procrastination (or outcome) emotions. The boundaries and relatedness of comfort perception and perceived self-efficacy in regard to procrastination have also been drawn widely.

Specific mindfulness theorization and practice in helping reduce procrastination, especially as a preventive intervention, are now unfolding empirically. Utilized mindfulness-related measures should take into account participants' awareness and interest toward individual thinking and assessment over the time windows of the targeted procrastination. Underlining another individual tendency, psychopathy or its lower-order counterpart Machiavellianism, in procrastination besides actively postponing work/focus representation is encouraged to further the community study on procrastination, especially in cross-field areas like humor and language. Individual/domain/focus variations of transcription were noted in the research process, and considerate solving strategies are offered to avoid losing valuable raw data.

5.1. Anxiety and Stress

As perhaps the most straightforward account, there is an immediate downturn in performance on the task before the deadline, leading up to a steep increase in performance just before the deadline itself. So important is this phenomenon that it has garnered two distinct nicknames: "slippery deadlines" and "deadline effect". Nervousness and worry surrounding an upcoming deadline can start off at a low level, little more than a gentle metronome ticking away. These can be exacerbated by unproductive thought patterns that feel utterly confoundable until deadlines loom perilously closer. We may then find ourselves clicking refresh on email, occasionally revisiting the original project, or "grooming" our online social profile rather than actually working on the thing we need to do. Then there comes a step change; with seconds to go before the task is due, an epiphany occurs, and working at double pace feels both effortless and delightful. As though on a switch turning on, the past several hours seem inexplicable: "Where were you?" If the deadline has delivered the performance manager to a state of flow, the need for on-stage characterisation has passed, and the spotlight can now be wholly focused on the task (Svartdal et al., 2018).

Anxiety concerning performance on a task before a deadline leads to performance decrement on the task. Therapy or meditative practices successful in targeting this anxiety have been demonstrated to lessen procrastination concerning work performance on tasks with deadlines in everyday life. Although efforts to acknowledge potential mechanisms will be undertaken, the focus here will instead be on the higher-order assessment that anxiety and stress about deadlines are contributory factors in procrastination. It is then worth examining the literature investigating this relationship. Procrastination and stress, posited as being linked but distinct constructs, will be reviewed, followed by literature exploring the nature of motivational interference. Self-imposed deadlines as a manipulator of stress responses and procrastination, direct measures of anxiety and worry concerning performance on a task with a deadline, normal variation covariate and as an outcome in behaviour change efforts will close the review of the mechanisms of interest (Steel et al., 2022).

5.2. Boredom and Lack of Interest

Boredom is defined as a mental state in which individuals experience a lack of interest or engagement in their surroundings, resulting in a pervasive feeling that time is passing slowly (Sümer & B. Büttner, 2022). Individuals who are prone to experiencing a chronic state of boredom may perceive their environment monotonous and disengaging in multiple situations. Boredom can occur when an individual is consciously aware that they are performing a task but fail to engage in the task mentally. There are two possible explanations for boredom: attentional failures and a lack of perceived meaningfulness. When attention-related failures occur, boredom is i.e., uninvolved in a task, thoughts wander, or distractions impede performing the activity. A lack of perceived meaningfulness suggests that it is possible to evaluate the time, the object, or the situation as meaningless to understand boredom. Attentional failures lead to feelings of boredom, whereas an urge to procrastinate task-related behaviors are raised by a lack of perceived meaningfulness.

When people experience boredom during a task, they are more likely to respond without intention to abandon the task. In such states, they tend to engage in a distracting task to cope with their boredom by searching for something to listen to. Procrastination embodies the conscious delay of important tasks. Boredom is a state that arises in uninteresting situations, suggesting that boredom draws attention and urges abandoning the current situation. This study also incorporates impulsivity and self-control, which are two characteristics associated with the tendency to abandon the foremost task and cope with boredom using a distracting task. Both procrastination and boredom involve the urge to alleviate unpleasant states. Individuals who are more likely to experience boredom may tend to abandon the task earlier to minimize unpleasant feelings rather than wait for the previous task to be completed (Steel et al., 2022).

5.3. Motivation and Reward Systems

Procrastinators often postpone necessary tasks until later, thereby decreasing their ability to carry out what they had planned. A procrastinator tends to convince themselves that they're using their time wisely, when in fact, they are wasting time. Procrastination interferes with putting plans into action. Those who procrastinate generally either perform lower quality work or fail to meet deadlines altogether. Procrastination, however, can be said to be a form of self-regulation failure, as would be overeating (Steel et al., 2022). All forms of self-regulation failure can be interpreted as finding the devil in oneself and love.

Another possible explanation is hedonic motivation or shift of motivation. A person who wants to leave their job but has invested years in the company tends to have a goal to avoid dissonance. Short-term goals may be to avoid interactions with unlikable and untrusted parties. Compounding the situation is the possible mundane logical thought of disproving and preparing material to present to a lawyer. However, when free time is available along with bodily arousal to study a book on love's revenge on the heart, the tendency is to shift to the latter. A person will prioritize the book over the target action of approaching their boss. Eventually, if feeling unfulfilled, they may pick up the paper but instead of doing anything substantial, sit behind a computer, read advice or articles, or surf without aim and put off the CPU (Киряков et al., 2011).

Delaying tasks tends not to produce more time later in an anxious state. There seems to be an additive process to delay: more anxiety from a present task translates into less ability to choose and initiate next tasks. Often it is the next task that is most consistent with one's already perceived exhaustion. Thus it would seem that motivation processes become either of a flywheel operating at increasing max or an engine stalled in bogging down until nothing is accomplished. Tiredness generates and promotes heavy delay and passive thought shift, and such an effect is general, for thought tend to bias toward protecting tiredness.

6. The Role of Time Perception

Time perception shapes the planning and execution of a sequence of events. Events that happen sooner are said to occur earlier in time, and thus lead to less errant behavior. The current experimental research aims to examine the role of event frequency as a temporally relevant factor in constraining the planning and enactment of time-specific tasks. Over a series of tasks (frequency and non-frequency congruency), people were generally faster at enacting frequency-congruent tasks, with a frequency isomorphism tending to be more salient, inhibiting speeded responding. Speeded responses were also narrowly error-prone, leading to heightened disregard for the contextually factors when these were needed to reject erroneous cases.

This method of studying error-detection draws upon the cognitive models of time perception in Judgments of Relative Duration. It examines not only how temporally relevant factors shape planning, but also how they guide action in both formal, sequential decision-making tasks and more ecologically grounded settings, including timed events in natural language. The motivations for each of these areas of study are also examined, including how their integration may better understand the rise of long-form text, or viewing and reporting of sport highlights (Steel et al., 2022).

The application of time-series analysis to out-of-lab event data stands to develop theories on the effect of contextually relevant factors in episodic event chains, building upon existing ecological perceptions. This approach may allow for methods to apply episode-specific behavior to the temporally relevant navigation of large collections of events, better categorizing similar events, authority, or other groupings. This manner of practicing episodic encoding may even be applicable in addressing maladaptive leaks in current, in-lab study paradigms (Svartdal et al., 2018).

6.1. Temporal Discounting

For some, it is not working on finishing academic work until it is too late to begin. For others, it is completing an item on the to-do list ahead of a meeting deadline rather than finishing it well in advance of the meeting. However, even the most productive people around may have fallen behind on a seemingly small number of things. Examples include finishing essential home tasks ahead of guests arriving or instead spending the evening working on non-essential things on the computer rather than writing down the important finance report. More formally, procrastination is defined as “the voluntary delay of an intended act premised on the expectation that the delay will be enjoyable (pejorative sense)” (R. Zentall, 2021). As general opinion, people know that they should work on, apply for, or prepare something important but instead read pointless posts online. Procrastination happens whenever a choice is provided between an aversive task and an easy alternative. This choice is also discovered when a choice is provided between an expensive item in the future and a less expensive item sooner.

When one procrastinates, one is often choosing to delay an aversive activity to engage in a pleasant or less aversive activity. This theory is based on the discounting of the value of a future outcome, as a function of the time to that outcome. Putting tasks off until later can also be thought of in the context of re-evaluating the value of the deferred activity because of its time to occurrence. The naming of the activity may often change as well—from planning to just in time to lack of planning. However, even though at one time the task may have had a high value, as the time to that task approaches, it may be seen as of lesser value or impact. Thus, procrastination can be viewed in the broader context of delay discounting. Delay discounting is generally applied to contexts in which the choice is between a smaller reward sooner and a larger reward later. It suggests that humans often make decisions to select a smaller reward sooner rather than a larger reward later, decisions that are usually considered to be suboptimal. The macro view of this is that these decisions are suboptimal in the senses that the amount of reward obtained is less than would be obtained had

they waited for the larger reward. At the time the decision to procrastinate was made, it may have been a rational decision—a choice between two alternatives, one that had a greater value to the individual at that time than the other alternative.

6.2. Future vs. Present Focus

As the first step towards a better understanding of procrastination, it is important to comprehend the true nature of procrastination. Procrastination is the tendency to defer unpleasant or frustrating tasks those are not associated with immediate delights (Kashiwakura & Hiraki, 2024). The languages of both Western countries and Japan do not have appropriate terms closely related to procrastination. Calculation is the behavior that tends to put off daunting work and is closely related to delay. Compared to procrastinators, calculators can let importance and urgency work together to perform voraciously. For procrastinators, there lies no consideration on the importance of the task, and the preference is directed to the more delightful task. In this case, the grading of a task's importance and urgency does not hold in people' minds. Such considerations are based on cerebral reasoning that is apart from temporal contemplation. The theory of two dimensions of a task states that there are two dimensions associated with preferred virtues in task performance: importance and urgency. One dimension regards the task' ranking evaluation in relationships to other tasks. The other is behavioral depth to perform a task in order to mediate between taste and its merits.

Procrastinators are most likely people who prefer tasks to be executed at even at steadfastly or slightly at later times, compared to the dueters, calculators, and doers. Slower doers sometimes concretize peripheral conditions; they fix rooting conditions, such as paper type, posture, or motion of limbs prompted by their preferences over similar types, thus they experience a feeling of wanting. They are never procrastinators, nonetheless they can be viewed so in terms of people' discipline. Such action-based delay cannot be viewed as procrastination as all disciplinary paths and peripheral constructions are evaluated based on the same temporal basis. It is just a global love for work able to be barely perceived as deciding on work. The other extreme is careless-deterred delayers.

7. Procrastination in Different Contexts

Several behaviors are associated with deliberative prejudice in self-directed action. At the individual level, such behaviors include planning, self-instruction, and various self-control strategies. At the group level, they include organization strategy, division of labor, and collective monitoring of output. At the societal level, they include laws, rules, regulations, supervision, and bureaucracy (Svartdal et al., 2018). An opposite set of behaviors delaying planned action is better known as procrastination. The term procrastination is rooted in the Latin word procrastinatio, which denotes a delay or deferment of an action. Thus understood, procrastination is a general behavioral phenomenon intimately related to the action. Action implies deliberative time-related behavior planning and intends to act at some point in the future. If such behaviors are postponed, reasoned action ceases to exist, and default actions take over or nothing happens for extended periods. The latter case of postponing behavior is described as an absence of behavior and is incited by different psychological mechanisms; for example, depression, apathy, feelings of helplessness, and lethargy. This type of behavior is grounded in prior productivity literature from different fields, especially clinical psychology, and is more often termed as "apathy" or sleep disorder. The focus here is mainly on one type of behavioral procrastination associated with intention delay and planning execution and is also more prominently called delay or behavioral procrastination (Steel et al., 2022). It is better understood as a target action incurring aversive future consequences planned and intended to be undertaken at a given point in the future. Its most notable form is a deliberative planned event or task receipt, not a spontaneous event.

7.1. Academic Procrastination

In this section the phenomenon of procrastination is described with focus on its form in the academic setting. The distinction is made between purely behavioral postponing of actions and psychological procrastination, the latter giving rise to the more negative emotional experience attached to procrastination. These two forms are explained with use of the Temporal Motivation Theory, a widely accepted theory of procrastination development. The section ends with a description of the negative consequences of academic procrastination specifically. Academic procrastination is characterized as the voluntary delaying of academic work. It is these assignments which become aversive and give rise to negative emotional experiences. Procrastination holds negative consequences such as hampered development of self-regulated learning competencies, poor health and lower grades.

Procrastination is defined as the voluntary postponing of an action already intending to execute it sooner (Thakkar, 2009). This definition elucidates why procrastination is often linked to negative emotions despite a general tendency to avoid or dissociate oneself from the negative. This need not be the case for purely behavioral postponing of an activity such as reading a book for pleasure. Because the voluntarily behavior is in line with the individual's preference, positive emotions can arise. An activity giving rise to procrastination is originally planned in advance or intended to execute it sooner. However, other activities or preferences arise in the intervening time period which invoke the behavior of postponing a task in spite of the expectation that it will lead to a worse outcome.

Most broadly defined, procrastination is any behavior that delays or postpones an action. While this definition encompasses a wide variety of delay behaviors, much of the governing literature focuses on academic procrastination, which is characterized by the putting-off of academically related activities such as studying, completing assignments or preparing for exams (Visser et al., 2018). Procrastination is an almost universal phenomenon for college students: between 84 and 95% of college students indicated procrastination regarding academic assignments. Academic procrastination is a specific form of procrastination which focuses upon procrastination in academic activities such as course readings, studying for exams, or completing assignments. Students are aware of the benefits of completing assignments during the initial planning period but as the due date approaches, the desirability of completing the assignment falls. However, the student is aware of the different outcome and so experiences negative emotions including anxiety and tension, yet postpones the execution of the work anyway.

7.2. Workplace Procrastination

Procrastination is a widespread phenomenon across various domains which delays task initiation until a future time of expected reward, despite aversive consequences. Task type influences procrastination, which is impacted by personality traits and self-regulatory skills. Low expectancy or value promotes procrastination, while high expectancy or value limits procrastination. Despite being pervasive, procrastination has been almost exclusively examined with student samples and academic deadlines. In the workplace, procrastination has been associated with deadlines, productivity, and general workplace behavior. This study has several implications.

Procrastination appears to be a widespread phenomenon among the workplace, with reported time wasting of approximately one-third of the workweek. Organizations seeking to facilitate employee productivity must first understand the nature of the problem. Self-report, direct behavioral observations, and time-tracking usability software provide measures of employee procrastination. Complaints of excessive time spent documenting irrelevant information or multi-tasking to avoid more difficult tasks should raise red flags about probable procrastination among performers. This study provides evidence that procrastination is an

important contributor to delay, aiming primarily to broaden the research on procrastination beyond academic contexts. It is established that estimates of parameters fit workplace procrastination.

Task difficulty or aversiveness are prominent contributors to workplace procrastination. Virtually all workplace arbitrators reported these as causing procrastination on some tasks. This is unexpected given arbitrators' extensive formal training suggests knowledge and ability to complete even the most complex cases. Aversiveness of arbitration was theorized to be mitigated by organizational mechanisms and contingencies such as reporting deadlines, group work, and penalty sanction. In contrast, the reality of avoidance strategies such as information hoarding justifies more caution. Complaints of time wasted on drafting, having detailed processes confirmed, and over-consultation point to substantive procrastination on tasks harder than completing the award.

7.3. Personal Life Procrastination

Lack of regulation in the personal life domain could lead to negative outcomes, such as life regrets regarding procrastination (LDR-P). The proposed LDR-P scale is a 13-item questionnaire, containing three subconcepts: quality, coping with emotions, and leisure. In two countries, a better goodness of fit for the one-factor and the three-subconcepts models was found using CFA. Although observed confirmatory reliability coefficients were marginal, LDR-P was internally consistent. Validity was supported by the theoretical connections to general and goal procrastination, as well as to negative moods, lack of self-management, and individual differences in personality. It seems reasonable to assume that LDR-P may have convergent validity with other procrastination measures based on the definition of dysfunctional procrastination as the time-delaying performance of an intention that is expected to have negative effects (Hen & Goroshit, 2018). The findings depicted that lack of regulation in personal life, as in social/casual life habits, sometimes gives rise to irritative feelings and regrets regarding life events. It seems that better regulation is needed. In general, individuals' lives are too wide and multifaceted. In coping with demands, it is not surprising to prioritize work over personal matters. However, some absolute basic things, such as health, relationships, and a family, should not be neglected. Learning new skills on a free day and spare time was also rated low. In a busy schedule, being able not to devote time for gathering knowledge or hobbies, and taking care of real interests is detrimental (Steel et al., 2022). Basically agree with this idea, as expecting only demands in a busy schedule is unwise. Some individuals may even adhere to the resting, unhealthy habit of watching movies or playing video games as a main way to cope with reduced pressures. It could prevent negative moods temporarily. However, according to the same cognitive gap, each distraction with a short satisfaction conclusion only triggers the notion of further delay. Proper development of this sub-concept involves leading the mind toward the wiser activity of active resting, e.g., spending some time on reading in a casual mood or gathering new skills.

8. Cultural Influences on Procrastination

It is clear that people from all over the world procrastinate; they all put off doing things, not just in terms of academic tasks, but also with regards to leisure and social activities. Every action is completed a time that is relatively later than originally determined. Another route suggests that procrastination arises from environmental influences such as academic pressures, lifestyle, pressure rating, and self-regulation deficiency framing the culture. Studies in neglected areas of culture seem to produce very rich data, which broaden the academic background of procrastination frameworks. Individualism-collectivism cross-culture prompters focus on exploring internal priorities to test the limits of the hermeneutics (Visser et al., 2018). There are societal and individual boundaries because different societies possess different times, tasks, and societal cycles; all aspects that affect procrastination aspects. There are nevertheless parallel differences that imply the convergence of cultural differences and the closing of individual boundaries and symptoms.

Macroe culture shapes the micro culture, which further refines the variances of choice preferences. It was claimed that there are cultural effects on choice satisfaction when outcomes will be revealed, whilst it was argued that such freedom one feels regarding cultural style influences the self-monitoring agent's choice.

8.1. Cultural Attitudes Towards Time

Culture influences attitudes toward time, punctuality, and schedules. Most academic studies of temporal processes were published in the United States and Western Europe, and so are implicitly based on Eurocentric assumptions. This section reviews research on procrastination that firms from a cultural studies perspective (Svartdal et al., 2018). From such a viewpoint, everyday phenomena such as timeliness, punctuality, and procrastination can be seen as reflections of deeper, often implicit cultural assumptions about time and the role of the individual relative to their society. These assumptions are often actions and hence can be said to privilege behaviorism over cognitivism. However, analysis here will embrace cognitivism in pursuit of workable theory.

Cultural attitudes toward time in relation to punctuality and procrastination provide a heuristic model of cultural analysis that attempts to be as comprehensive as possible in order to capture the messiness inherent in everyday research. The focus is on the differences between individualisms and collectivisms and their temporal orientations in terms of the social clock, time horizons, punctuality, and procrastination. This provides an analytic structure for empirical studies, as well as theory, and the model is celebrated of research on time, punctuality, and procrastination based on it in relation to such approaches as social actors, complex adaptive systems, and social constructivism. Collectivism-affiliated respondents stressed the effects of power but a multiplicity of constraining factors attached to a fear of punishment, which hinder procrastination at the expense of their own well-being (Steel et al., 2022).

8.2. Individualism vs. Collectivism

Motivational aspects, specifically individualism and collectivism, have also been studied in relation to procrastination (Hen & Goroshit, 2018). Individualism refers to the cultural dimension in which individual goals and wishes are more important than group goals. In individualist societies, people believe that individuals should be independent and self-sufficient. Responsibilities and obligations are value-driven rather than prescribed by authorities or traditions. Independence is important. Collectivism refers to the cultural dimension that emphasizes group goals over individual goals. In collectivist societies, people depend on others, as many aspects of daily and work life are managed by groups. Responsibilities and obligations are dictated by authorities or elders. Thus, collectivist people see themselves as relationally interdependent, viewing themselves as parts of groups rather than individuals. Western cultures are usually characterized as individualist; Asian countries and some Mediterranean and South American countries are collectivist.

Overall, individualism correlates positively with procrastination. People who have a high level of individualism are more likely to procrastinate. A positive correlation between self-identity and procrastination has also been found. Students who identified themselves as procrastinators were more likely to postpone their academic tasks. In addition, procrastination was found to correlate positively with self-regulatory failure. Perceived control was also found to be correlated with procrastination. Supporting collectivism, shame was found to be positively correlated with procrastination. Students who felt shame were more likely to procrastinate. In addition, the need for belongingness was found to correlate negatively with procrastination. Students who had strong needs for belongingness with family and friends were less likely to procrastinate. However, the failure of deadline-related variables to correlative is surprising, as it is

expected that students with a strong feeling of urgency and with a specific deadline would be likely to complete their work on time.

9. Strategies to Overcome Procrastination

Procrastination behavior is observed in all segmentation and ages. Procrastination is commonplace and that the practice of putting off a task or delaying an event that has become poorly performing is detrimental to performance and general well-being. Various types of interventions have been used to fight procrastination, such as time management of strategies, self-management, or cognitive behavioral therapy. There is a sample consisting of 164 studies on interventions to overcome procrastination, from which this current study examines some characteristics such as publication year, methods of intervention, and target group in a system-wide manner.

The results show that the number of studies has significantly increased in the past two decades. Interventions for university students have captured a larger portion in the recent years than interventions for general population or other target groups. Time management strategies seem no longer the most popular methods of intervention. Campus life skills, multimodal approaches, and ICBT are recent intervention methods of a larger scale developed to reduce procrastination. Group and individual face-to-face as well as internet-based interventions are recent good formats of implementation. With the increasing adoption of internet-based interventions, larger sample sizes are feasible, creating convenience for random allocation and further enhancing the recruitment of same-target groups and control group.

Strategies and skills can also be taught to manage time effectively such as managing a calendar, breaking down project deadlines, commitment to work, prioritization, setting mini-deadlines, and short work contracts. More broadly self-management and self-regulation are also effective choices for tackling with procrastination. These methods target on decreasing procrastination behavior, promoting better self-accountability, forming good habits, checking progress, and building or breaking the habits (Yan & Zhang, 2022). More specific suggestions contain holding weekly or daily individual assessment, considering the benefits of task completion, sticky notes for putting related assignments on with visible reminders, and awareness training.

9.1. Time Management Techniques

Tasks often come with deadlines, self-imposed or externally programmed time limits for completion. A deadline usually causes an intrasignificant and more gradual decline in motivation due to its value loss. This research investigates the role of deadlines in work delay, with an emphasis on procrastination. A central theory is developed in which deadline distance is predicted to have a curvilinear impact on work delay. When the distance to the non-procrastination deadline is short or the distance to the procrastination deadline is long, risks of significant work delays are reduced. However, in the mid-range these distances, work delays increase significantly. Modes of proximity are presented, capturing the distance-to-deadline effects on work delay. The theoretical model is examined in two studies: a controlled laboratory experiment and a field survey measuring actual delay behavior. (Steel et al., 2022) hypothesize that procrastinating behavior based on deadline distance is mediated by procrastination propensities.

A temporal motivation theory predicts that as deadlines near, delay risks grow exponentially. Using the combination of mode and thought processes, also show similar patterns are found for over a 6-week period in terms of survey week and risky delay choice. Further, three independent waves of the field study show deadline effects on procrastination were observed over 10 weeks of data collection with numerous individual and situational influence variables measured. Procrastination generally increases average daily delay while also generating more varied delays. Understanding procrastination as a kind of risk involves

being informed about the nature of the risks involved. Found within the theory's framework is the recommendation that deadline risks should offset with postponing as temptation to defer tasks grows. The second approach is ideational, seeking to block the thought processes that create deadline risk. Finally, if combined proximity modes are temporarily effective, deadlines might be extended, but only temporarily.

Broader range effects of deadline proximity on work performance delay, engendered-associations, and future research, are discussed. Tasks are prespecified deliverables expected to be completed in a designated period. They are also commitment processes requiring self-regulation to accomplish desired outcomes. A temporal motivation theory proposes deadlines are experienced as time-limited opportunities to achieve a goal or avoid failure, and thus tasks are perceived as high value in the future.

9.2. Goal Setting and Prioritization

One reason people procrastinate about starting or completing their planning project is that they have no idea where to begin. Set goals to accomplish what is meaningful to you. Put first things first. If something is not urgent or important, let it go. How to approach a project is often not determinate, as it involves couplings of means and ends that have not been established beforehand and detailed rules are lacking for how to set a project under way. All of this could lead to the sense of feeling overwhelmed. However, goal setting is a significant cognitive variable in the prediction and explanation of behavior. Key observations made by Kuhl suggest that people can develop intimately associated plans and goals or vague goals or none at all. Ability to plan and set goals may be moderated by other cognitive variables. General goal setting involves the relevance and value of the intent, and its perceived feasibility and specificity (Svartdal et al., 2018). This can entail a long process of trial and error, revision, and refocusing. Such behavior is not unintelligent but complex. Goal setting and prioritizing involve a repertoire of skills and behaviors, such as specifying task goals and sub-goals, identifying means, providing on-going feedback, self-organization, and sequencing. The first condition precedes the second. Together they can be bundled together into three categories. These categories delineate expected ranges of relations between task difficulty and performance, such as stems of avoidance in the case of too high settings and indifference in the case of too low settings. Underlying this is a cognitive model that posits temporal representations of cognition and behavior and structures time into an event-time register (Steel et al., 2022).

9.3. Cognitive Restructuring

A long-standing yet novel approach to treating procrastination is cognitive restructuring, a method firmly grounded in cognitive behavioral theory. This psychological process interprets procrastination as a product of negative thinking that invites avoidance and despair regarding unpleasant or challenging tasks. It aims to break negative thinking patterns about procrastination, perceived threats, and feelings of incompetence, frustration, or fear. Given that unpleasant thoughts raise anxiety and a desire to escape, avoidance through procrastination can follow. Those that do not procrastinate, however, tend to think differently about the situation. For them, the same threat is less daunting. Those who procrastinate think they would not be able to manage the task impacts. Cognitive restructuring aims to challenge perceptions of situations that are viewed as threatening and as yielding unpleasant emotions. Furthermore, restructuring instruments are employed to challenge unhelpful thoughts. This treatment method has been adapted for procrastination in the form of dialogic assignments and cognitive restructuring assignments.

First, to challenge a negative statement, a succession of questions is posed. With each reply, it is further challenged until reaching a more that seems defensible or difficult to counter. The triggers and effects of procrastination are queried, and the aim again is to arrive at a defensible statement. The ideology is that the less perfect a person's ideals are, the more compassion-oriented they will be towards him or herself. After

noting this altered attitude, temporary credits are generated to minimize guilt over prior procrastination. Restructuring assignments with questions to guide self-discovery such as, “Why is the task so important?” can trigger alternative modes of thinking about the task and its effects. This approach aims to enhance the idea or interpretation that one can manage the task and do so in a successful, productive, and acceptable manner, and that this will result in a sense of satisfaction and well-being.

9.4. Behavioral Interventions

A number of psychological treatments specifically targeting procrastination have been developed. In recent years, the number of trials grounded in these treatments has increased, warranting a review of the effectiveness of psychological treatments on procrastination. A systematic review and meta-analysis of randomized controlled trials (RCTs) evaluating psychological treatments targeting procrastination were identified in peer-reviewed journals.

One review addressed procrastination treatments, specifically behavioral activation (BA) for people with depression, but other types of treatments were included. Studies of psychological treatments targeting procrastination in various contexts were included in meta-analyses. Common treatments were controlled, primarily web-based, and included inactive controls and waitlists (Rozental et al., 2018). Most treatments were similar in length and number of sessions and focused on psychoeducation, cognitive restructuring, emotion regulation, behavioral activation, and monitoring. Most of these trials reported a significant reduction in procrastination in the experimental group, although some studies were not statistically significant.

Three studies addressed active psychological treatments targeting procrastination in students based on cognitive behavioral therapy (CBT). Supplementing CBT with mindfulness was not significantly superior to CBT, but both were significantly superior to controls, indicating that mindfulness could analyze emotions and increase behavioral activation. Meta-analyses of heterogeneous treatments for procrastination reported moderate-to-large effect sizes, and the Dunn's effect size is moderate, indicating that procrastination treatments are generally effective for all groups. Procrastination treatments were effective across contexts, types of treatment, and populations.

This review contributes to the literature by offering a comprehensive overview of the number and types of studies addressing psychological treatments for procrastination, providing insights into how to best approach treating procrastination and the impact of treatment, suggesting future directions for research and practice. Treating procrastination with a cognitive behavioral approach is recommended due to widespread acceptance, the availability of treatments, and treatment success.

10. The Role of Accountability

When it comes to tackling procrastination, it can be difficult to stick to a plan without support from others. This is where accountability comes in. Finding someone to check in with on progress toward goals, such as a buddy or a coach, can make a real difference. Accountability doesn’t need to be complicated: simply checking in with someone on a regular basis to see if deadlines are being met can help. To increase accountability, think of someone to whom commitments will be made and then consider when and how to check in afterward.

Informing a friend of a later deadline can increase the likelihood of getting it done on time, while even just writing down goals or well-defined plans can help too. The caveat is accountability shouldn’t induce fear of failure or it will be counterproductive, so finding the right balance is important. Moreover, being aware of the influences on behaviors greatly reduces unscrupulous procrastination. Embracing self-kindness as

opposed to self-judgment, your feelings of a failure can lead to better well-being and productivity (Svartdal et al., 2018). Try reminding yourself of productivity weaknesses you'd consciously like to change, and then evaluate chances of success on a scale from 0-100%. For better ultimate performance, tasks should not only be defined precisely; they should be analyzed with respect to individual strengths (Steel et al., 2022).

In sum, forming implementation intentions (especially with a stranger) as opposed to only setting goals can help get something done. Similarly, room for leeway may also increase chances of sticking to one's plan, since rigid goals can be dispiriting when unmet. Searching for and paying explicit attention to a stimulus coupled with higher co-occurring activation should not only ensure an appropriate direction of effort; modulating one's current emotions should ease the immediate urge to avoid the goal-directed behavior. Students may benefit from self-compassion minded university counseling services, whereas workers may benefit from moderated work meetings about punishments for failing deadlines.

10.1. Peer Support Systems

With the advance of online and mobile computing, procrastination has become a more prevalent behaviour. Not only this behaviour is demonstrated in traditional tasks like studying and working, but it is seen on social networks and in the context of browsing news items and friend updates. In such situations, procrastination brings awareness of time lapse, loss of productivity and negative feelings, but also increased engagement and a sense of social presence. Three types of procrastination have been identified in social networks along with their triggers: checking updates from friends, browsing news items, and getting involved with applications and games. Different personal characteristics appear to have varying degrees of influence on these types of behaviours, giving rise to the need of different anti-procrastination measures. Given the potential of social networks to be either sources of procrastination or effective anti-procrastination tools, there is a need to design a more deeper understanding of procrastination on social networks and more profound persuasive tools to combat it.

Psychological treatments for procrastination have gained increasing attention in the past two decades, but their efficacy is unknown. A systematic review and meta-analysis examined the available evidence of the efficacy of psychological treatments for procrastination. Targeted outcome measures included measures of self-reported procrastination, behaviour change, and psychological outcome measures. Nine studies (N = 943) met the inclusion criteria. Results revealed a medium effect of psychological treatments on procrastination at post treatment, and small yet statistically significant effect sizes at follow-up. Transdiagnostic approaches, multi-component treatments and improved attendance rates are potential avenues for future work (Rozental et al., 2018).

10.2. Professional Coaching

Professional coaching is a partnership between caring, committed coaches and motivated people determined to make choices and achieve results. Coaching is about using the present to create a better future. Coaches provide a supportive space where the client can think and act freely, develop more effective strategies, and become more aware of themselves and their choices. At the same time, coaches provide accountability and advice based on their experience in the field, and help clients create practical plans with precise measures of success and timeframes. By contrast, psychotherapy is mostly a healing process, which is not necessarily focused on planning and action. Psychological coaching is conducted by trained psychologists. Their dual expertise in psychological principles and coaching philosophy helps in tapping people's potential, and fixing or modifying dysfunctional emotional structures. Therefore, coaching should not be confused with therapeutic services, which entail addressing childhood problems, emotional disorders, and psychopathology. Psychological coaching can begin with the premise of "healthy acting," where the aim is

to maximize the client's skills, rather than treating mental illnesses. Like coaching, psychological coaching is a learned skill to be personalized for each level of input and output. Individual coaching is one-on-one interaction between coach and client, normally structured around a series of sessions. Group coaching can be semi-structured with two or more coaches sharing the coaching process, or fully structured with task-oriented groups having different activities, including coaching sessions, and workshops with expert speakers. Group coaching is relatively common. Coaching can take many forms: face-to-face sessions with both clients participating in the same place, online sessions via chat-rooms, or long-distance coaching over the telephone. Group-based coaching interventions have not received as much attention as individual approaches. A beckoning issue is how to reach a wider audience, particularly of students. Group-format treatments seem promising in that respect.

11. Technology and Procrastination

A variety of time management aids and task structuring software is available to assist users in a more efficient management of their work. Such task-oriented support tools typically allow a user to specify a task, perhaps with multiple subtasks, and prioritize that task or group of tasks within a system of value-based management of tasks. However, in such context independent systems, it is possible to have a dozen or more tasks that are worth doing a particular day. A personal management day planner, for example, typically allows a user merely to designate a certain amount of time per day according to a month-ahead view of time. Time management software exist which from the finer-grained subtask level and accompanying time estimates, 'back-schedule' a larger set of tasks into a daily schedule. However, these tools are contextual, meaning that when a day is opened, it is not generally desirable to examine the entire month's worth of tasks, priorities and time estimates. A concerned user is often simply "too busy" with intolerable overhead. Rather, it is the set of concerns relevant to that day are in focus, and which are currently left undone (Breems, 2015).

A broad model of procrastination behavior and policy can and must be built off a careful analysis of the input, output, and process categories of analyses presented above. However, the field still needs to build the terminology write a process model which help express policy, knowledge and design options. Attention must shift from the problem of procrastination as an incidental interface artifact and towards the problem of procrastination in general as a significant behavioral phenomenon. Procrastination is not a transient or fringe phenomenon; it is a trick of the psyche which is here to stay. Studies of procrastination offer rich fruit for not just purging the behavior, but equally for illuminating the underlying world of intention, cost and value more broadly.

C.Deserves some initial attempts at better harnessing the problem as well. Modern forms of time-trekking technology advance so quickly and are generally so crude yet pervasive that many user experience questions will emerge. Conversely, many avenues of software add to the problem of procrastination. A body of research examining what types of computing affordances might lead to greater computering engagement by displacing mundane procrastination could be developed. Ultimately this area may unlock much deeper insights into any number of behavioral dilemmas.

11.1. Digital Distractions

Digital distractions are a relatively new factor influencing procrastination behavior. With the appearance of personal computers and the internet some thirty years ago, researchers have become interested in the nature of computer behavior and computer use. Initial studies focused on whether or not a computer could be an effective tool for individual behaviors, from complex tasks such as controlling a process to simple tasks such as writing a letter or coming to a conclusion based on data sets (Breems, 2015). During this digital age,

researchers raised questions about how time spent on the computer can negatively influence procrastination behavior. As computers and smartphones become embedded in people's lives, and because they can be used to perform both productive and non-productive tasks, it seems crucial to determine how computer use may facilitate procrastination. Computer procrastination involves behaviors that are enacted at computers, deferring an intended task for a task that is valued less at the moment. Social networking sites (SNS) form a category of applications that allow for unfiltered connections between peers and enable the creation of public profiles. The design of these sites affords unrestricted visibility of messages and actions shared by any user on the sites. Users choose friends or groups, which allows only a selected set of peers to view specific messages. However, excessive social media usage among students, children, and workers has received significant attention in recent years for its association with low productivity, reduced reading ability, and lower educational performance. Such usage is a possibility for real-world procrastination on academic tasks, work, and personal projects (Alblwi et al., 2020). Those whose usage is defined with excessive or problematic behaviors try to instill more balanced usage patterns but cannot resist the immediate benefit SNS provide. The desire to restrict or alter the experience is new, prime-time dissonance. Users wish to see motivational elements in tasks that add satisfaction, such as rewards, friends' influences, and reminders. However, tasks that have direct deadlines or are due are often inflexible and less motivating.

11.2. Apps and Tools for Productivity

A common computer-based approach to reducing procrastination is to focus on time management. There are many applications for tracking how time is spent. The idea is that by making time spent seem less anonymous, this time can be managed better. These types of applications typically require either a serious entry burden or a need to switch systems to see what progress has been made. Liquid Time is a different kind of application for tracking time spent that tries to address these concerns. However, it is also different from anything found on other devices.

Those with heavy computer time procrastination make nearly perfect use of their computer time. They inspire on screen, convert video formats, edit photo albums, create complex spreadsheets, etc. Nevertheless, they feel they could do more during this time. In general, with a few 'procrastinatory activities' a certain level of busyness is chosen. The chosen activity will consume an amount of planned activity that is otherwise used for default activity. More time is thus spent out of choice. These 'procrastinatory activities' are either inspired or productive in a way the focus activity is not. This raises the question of which computer-based activities are preferred in a procrastinatory way. A coarser descriptor is screenspace. How this preferred screenspace shape productivity is the focus of next phase.

There often is an idea that having or not having an application is black and white. However, careful consideration reveals that the extent to which many applications are preferred is graded. Some applications are used leisurely but only in dedicated sessions and do not really cause problems. The negative influences of others are more severe and more persistent across time. It may thus be plausible that an application does not have an absolute consequence on procrastination, and at least partly that applications are required to bring about change. Modelling suitability of computer based applications believes it is possible to alter preferences for existing applications. From previous consideration it seems likely to succeed in altering modest to average applications. More success might be expected for applications with highly desirable but still minor computer based preclude.

12. Case Studies of Procrastination

A focus group of seven students from Western Norway who had been on the brink of becoming high school dropouts was brought together to recount their journey from pure procrastinators to completing the diploma,

four students from Barne- og ungdomsarbeiderutdanningen were collected to talk about how they procrastinated during their education. The students met for 90 minutes in the cafeteria once a week for five weeks with a moderator, after gathering all the records, the data were transcription before it was analyzed. Aspects such as negative emotions and future/possible selves were interpreted, along with task characteristics. Furthermore, behavioral delay was more closely examined since it is an underrepresented area in existing literature on procrastination (Svartdal et al., 2018).

Overall, teaching procrastination and delaying behavior based on data from an educational area with procrastinating dropouts seemed to provide uncharted insights into these behaviors and contribute substantially to the field. As data emanated from purely behavioral delays rather than tests and scales, there was a higher risk of unreliability. Although they pretended to complain a lot, this translated into seeking out the advisor extremely early. When having projects and assignments with a genuine and relevant interest, the students astutely guidance and increased motivation. It would have been easy for the advisor to shut them out. Behavioral delay was mostly absent from the other two studies, alongside the focus on educational procrastination and high-school dropouts it was therefore an ambition to widen the scope.

The procrastination group comprised fully-fledged high school students at risk of dropping out, some had ongoing education programs while working on other types of degrees such as adult education to earn a diploma. While dropouts are considered low-achievers by society, some were surprisingly smarter than what could be deduced from their diplomas. Suggestions for future research should explore the observed phenomenon of behavioral delay, stretching this research field into other contexts such as leisure, sports and primary schools. A mixture of different academic levels among the students could be used and adapted, and diverse educational setups from universities, private centers and schools could be examined.

12.1. Successful Overcoming of Procrastination

This thesis is devoted to the complex relationship between procrastination and implicit self-praise. Three studies examined whether implicit self-praise (i.e., individuals' automatic positive self-evaluations) is an influential factor that can lead to successful overcoming of procrastination by achieving the motivational state to act. The first study investigated whether more frequent encounters with self-related action representations shift the implicit self-praise of participants. Two experiments were conducted here, one of which focuses on positive and negative self-verbs while the other on procedural self-pronouns. The frequently encountered self-pronoun (i.e., "I") favors successful future action representation, a boost of implicit self-praise compared to the less frequently encountered self-pronoun (i.e., "he"), leading to a state of readiness to act. However, one single encounter of "I"-dominant representations is not enough for a boost of implicit self-praise to occur. Instead, the association of "I" with the successful outcome of past actions is required.

The second study examined whether past successful action representations boost implicit self-praise and further lead to successful regulation of the motivational state to act. This study focused on how task representation is conducive to positive or negative evaluations of the self as a result of a successfully or unsuccessfully conducted task. In addition, by focusing on the different degrees of success yielded through an action on the task, this study attempted to systematically gather information on implicit self-praise (i.e., general self-praise and task-specific self-pleasure or self-derision) and behavioral intentions or a tendency to act. It was concluded that task-accomplished states must be induced instead of task-attribute states, as it better provides the basis for self-evaluative outcomes and the motivation to approach (or avoid) the task (Svartdal et al., 2018).

The third study investigated whether contextual manipulations that have been shown to affect explicit self-esteem also affect implicit self-evaluations, focusing on the self-enhancing effects of self-pronouns in spontaneous action production. Contextual primes that focus participants on recent actions were found to produce a general boost in implicit self-praise. Furthermore, this boost appeared to depend on the type of action representation that is induced: greater effects occurred for self-related procedural representations than for event representations.

12.2. Long-term Effects of Procrastination

There are long-term effects of procrastination but the most serious may be hard to quantify. Many indicators of reliability, credibility, perceived professional competence, self-efficacy, creativity, academic engagement, cooperation, and so forth, change as a person delays, not necessarily at first but they eventually may be lost. From a more personal point of view, procrastination is associated with emotional problems such as increased stress, anxiety, worry, guilt, health issues, depression, low self-esteem, low well-being, regret, and an increased risk of the onset and course of these states (Svartdal et al., 2018). Chronic procrastinators tend to form a procrastinating identity. A multitude of ego and identity relevant, along with learned helplessness in time management situations, may develop and lead to long-term procrastination.

Unlike personality traits such as extraversion or conscientiousness, which are stable over the life span, procrastination may fluctuate. General, chronic, and occasional procrastination can all be assessed but strict definitions would not accomplish much. Assessing the long-term consequences of procrastination has already tangled practical difficulties. Finding potential outcomes is a complex, yet doable, process that certainly falls within the ambit of science. However, cumulative processes pose problems not only for study design and practical issues, but also because factors that are outcomes one time may be causes the next. It is doubtful whether the individual starts out as a procrastinator or a non-procrastinator, but many processes can lead to either, and feedback loops may be different in those who gain a procrastinating identity and those who do not. A path like the example provided likely exists, although it is probably not a linear one. Procrastinating early on has quite a different outcome than postponing trivial matters.

13. Future Research Directions

With the deepening research into procrastination, a body of literature concerning diversified themes has emerged and calls for the attention of future research. In-depth research on the binary aspect and type distinction of procrastination can be continued. Tremendous advances have been made in the exploration of the general definition of procrastination. However, most of the research in the past has focused on the unfinished task aspect. Procrastination is not simply refraining from starting to work on a task. Notably, postponing an ongoing work is also a non-productive behavior that frustrates motivation. Therefore, researchers can adopt a broader definition of procrastination beyond task avoidance into unfinished tasks. In addition, to clarify how each type is distinct in terms of experiential levels, emotional experience, interpersonal organization, or performance catastrophizing, researches that entail cross-type comparisons should be encouraged. For the recent advancing interest in special populations, a clarification of distinctness in terms of general differences in types of procrastination is warranted (Yan & Zhang, 2022).

Beyond procrastination determinants, more insights on procrastination/diverting mechanisms and prosperity can be examined outside of the applied aspect. For example, individuals endowed with inter-temporal subjectivity may be inclined to drift attention toward hedonic pleasures at the diversion of future-utilizing actions. Furthermore, those individuals might profess the expansion of indulgence; thus, procrastination can be an emotional regulation to excuse procrastination/inhibition (defer) with the aim of future productivity. Given the abundance of new media, their increasing pervasiveness and demand to use in daily life, and their

influences on self-regulation and contextual alteration, how individuals exploit such media in procrastination behavior and how new media shape prospects in life or internal mindset can also be suitable themes (Kashiwakura & Hiraki, 2024).

13.1. Interdisciplinary Approaches

To advance the understanding of procrastination, one must embrace its complexity. This complexity can be found on many levels. Indeed, penalising or stigmatising procrastination only serves to silence it. It is too late to attempt to identify a disease or illness from which procrastinators suffer in the ways that those afflicted by disorders do. Lawrence Steinberg suspected that mainly young adults (18-22-year-olds) procrastinate, and that procrastination declines with age. Steinberg held strong views and debated his corner vigorously. He and pre-eminent American psychiatrist and author collaboratively wrote an impressive textbook on procrastination. Paradoxically however, brought with her a reputation as an advocate for compassion in psychological work, which Clarke's advice almost wholly lacked. Subsequent authors and scholars include and the Institute, but the harsh vigour of her youth has mellowed. Now she advocates not telling people to pull themselves together and just get on with things but suggests guiding people to empathically attack inertia at the root. This involves helping them examine their beliefs, and identify choices underlying the beliefs. Such beliefs and feelings might include 'What will happen to me if I try my best, fail, and make a fool of myself?', or 'I'm a hopeless case, full of nothing but useless ideas' (Yan & Zhang, 2022).

Commitment to an academic discipline embraces time, rehearsal, and a sharing of thought. The latter can involve the remarkable experience of constructing a cohesive whole out of unassimilated fragments; however, it is important that some actions must be driven inward, or against life and growth. Hence, it might be thought askance that the discussion of procrastination not only concerns an ultimately unquestionable and egotistical activity, but also one whose weather is past comprehension by the unmarked. Procrastination must be kept at arm's length, always firmly separating within oneself and who you are. A gap must be maintained between the knowing and the snares of non-knowing, the untransmuted, and unconsidered, otherwise thought will cease and embarrassment grow.

13.2. Longitudinal Studies

Another reason for favoring measurement scales in procrastination research is that dilatory behavior is often difficult to operationalize. However, reliance on self-reported delay has moved procrastination research away from the core characteristic of procrastination, behavioral delay. The number of studies focusing on behavior in procrastination research is scarce. Furthermore, reliance solely on self-reported procrastination may bias results. Hence, bringing back behavior into the procrastination equation may be worthwhile. In the present paper, they attempt to do so by focusing on behavioral delay when action possibility presents itself. They address the implementation phase of intended action when the person can choose swift vs. delayed action. This allows for a focus on time-related behavioral dimensions with less emphasis on what people are procrastinating, but stronger emphasis on how people behave when procrastinating. They argue that such a shift better captures important properties of behavioral onset delay seen in procrastination. They briefly examine existing literature on dilatory behavior in procrastination, demonstrating that there are surprisingly few studies examining the relation between self-reported procrastination and corresponding behavioral delay, and in particular onset delay. Analyzing procrastination from an evolutionary life history perspective, it is argued that the procrastinator lives by a fast life strategy with a psychological time orientation on the present. Such a fast life strategy has been functional in unpredictable environments during evolution, fostering impulsivity, high risk-taking, overlooking consequences, and discounting the future. However, as contemporary life emphasizes planning, a fast life strategy has become maladaptive, with a preference for

instantly gratifying options rather than more beneficial longer-term goals. Such a preference is associated with negative consequences that make habitual procrastination maladaptive. Thus, procrastination is associated with a number of adverse states and problems, including increased stress, lower task performance, reduced well-being, regret and suffering, and risk of mental and physical illness.

Procrastination is an enduring vice, with chronic procrastination rising from 5% of the population in the 1970s to approximately 30% in 2010. This is notable because procrastination is inherently an irrational or a self-defeating behavior. A review confirms that the ramifications of delays are typically negative, from health to wealth to happiness. Patients failing to comply with medical advice has long been a serious issue, with procrastination singled out as a significant contributor. The study of procrastination has become a significant field in academia, with various disciplines all weighing in. Understanding why we procrastinate has been hampered by three methodological obstacles. Workplace procrastination is rife, with estimates that approximately a quarter of most people's working day can be characterized as procrastinating, with attendant productivity costs. Yet, over 90% of studies are conducted with student samples. The Attraction-Selection-Attrition model indicates that those who procrastinate excessively could either not select, not be selected, or simply leave positions where their dillydallying is detrimental. Procrastination may not be as relevant to employers as it is to educators. Generally lacking is research that makes use of objective measures alongside self-report measures. Furthermore, most of this research is concurrent instead of longitudinal, with the latter really required to assess the effects of delay.

14. Conclusion

Procrastination is a universal behavior that tends to be negatively biased by most people. However, procrastination is quite natural in busy modern society. Procrastination is closely related to emotion and has a detrimental impact on performance, health and well-being, which requires more attention from both the public and researchers (Yan & Zhang, 2022). In the essence, procrastination is a multi-facetted phenomenon with multi-dimensional types, regarding prevalence, target and motivation. Rational choice explains procrastination as a reasonable comparison between future and present utility with discounting function. Meanwhile, general decisions can be postponed and uncertainties of costs and benefits are critical to the intention to procrastinate. Emotion is another crucial standpoint, as the logits of these two approaches modulo a constant term are orthogonal to each other. Sluggish mood, time and swellness are suspected to be at least two emotional processes behind procrastination. Due to doubtable effectivity of video or mobile apps, suggestions are grounded for the improvement and evaluation on procrastination of as well as emotional processes with established tasks through dynamic and intensively experimental methods.

Despite its potentially adverse effects on task performance and general well-being, procrastination is very common in both everyday life and academic field. Literature on procrastination is reviewed in a systematically bibliometric way. Being captivated by its ubiquity, both psychologists and computer scientists pay attention to the issue of procrastination. Procrastination is one of the major topics in psychology studies, having been increasingly studied as an emerging phenomenon since the early 1980s. Surveys in recent years show that more than 70% of college students are chronic procrastinators and 90% of the general public have delays in some aspect. As for computerized, digitalized or online-based procrastination, in academia it is also widely reported, such as spending excessive time on social networking, video streaming, game playing, shopping or even gambling. Procrastination in this way has become a fashionable but taboo topic in some online communities.

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