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Thesis Title

Thesis Subtitle

Master's thesis in partial fulfilment of the requirements for the
degree of

“Master of Science”

Author: Author Name

Submitted to the Joint Master Programme on Human-Computer
Interaction
Salzburg University of Applied Sciences
Paris-Lodron-University Salzburg

Assessed by:
Title First name Surname (supervisor)

Salzburg, Date of Submission

Declaration on oath

I, first name, surname, born on day.month.year in place, hereby certify that I have adhered to the principles of scientific work to the best of my knowledge and belief and that this Master's thesis was written by me independently. I have not used any sources and aids other than those indicated. I affirm that I have not previously submitted the Master's thesis as an examination thesis in any form, either in Austria or abroad, and that this thesis is consistent with the thesis submitted to the assessors.

Place, on day.month.year

First Name Surname

Personal Identification Number

Zusammenfassung

Abstract

Brief summary of the thesis (approx. 200 words) in English goes here

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Chapter 1

Introduction

The popularity of home offices has risen again after fading in the 1990s. Americans' work habits and environments have changed dramatically since Coronavirus closed offices nationwide, resulting in millions of professionals suddenly working from home. Many are looking at the likelihood of long-term teleworking to remain an integral part of the work environment long after the pandemic.[**BibEntry2020Jun**]

Unsurprisingly, a survey report conducted by owl labs suggests that workers who were working from home reported to be happy 22 percent more than workers who work in an on-site office environment.[**BibEntry2022Nov**]

The pandemic is not the only reason teleworking is becoming common: With the help of modern technological work tools, more and more people are able to work from no matter where. This opens up opportunities for people who may not have access to traditional office spaces, and it also allows for more flexible working arrangements.

One of the benefits of working from home is that it blurs the line between work and private life. This can be a good thing, as it can make it easier to transition between work and relaxation. On the other hand, working from home can bare some downsides too [**Marsh2022Mar**].

According to a study conducted by Joblist [**Joblist2022Nov**], working remotely led to increased distractability in 53.1 percent of respondents, claiming that they found it to be difficult to stay focused on the task at hand.

Research has shown that digital distraction has become the primary factor for procrastination[**Lu2014Dec**] and Social Media is likely to play a big part of that as there is no doubt that social media can be bad for our productivity.[**Vithayathil2018Jan**] In recent years, social media has become an increasingly prevalent part of our lives. According to a study by the Pew Research Center, as of April 2021, 71 percent of American adults use social media platforms such as Facebook, Instagram, LinkedIn, and Twitter.[**PewResearch2022Nov**]

A study conducted by the University of California, Irvine found that social media is the main distraction at work today. The study found that employees were interrupted by social media notifications an average of every 10.5 minutes , and it took an average of 25 minutes to return to their original task.[**Mark2008Jan**]

David McClelland argued that productivity is important to life satisfaction because it is a key ingredient in achieving goals and meeting needs. He stated that people who are productive are happier and more satisfied with their lives because they feel like they are accomplishing something.[**McClelland1961**] Furthermore,

John W. Kendrick argues, that personal productivity is not only a private matter, but a societal one. John Kendrick's argument is that productivity is not only a personal matter, but that it is also a societal one. This means that if individuals are successful and productive, then the whole society will be as well. This is because a productive society is more likely to be prosperous and thrive than one that is not. [Kendrick1987May]

Under modern working conditions, it is becoming increasingly difficult to separate work and personal life, as technology allows for more flexibility in where and when we can complete tasks.

Respondents working from home also reported that they would check their work devices more frequently than they did before going remote and they regularly work past normal office hours. In fact, 70.9 percent of managers self-reportedly worked past normal office hours on a regular basis since working from home

Consequently, this can lead to an increase in stress levels and fatigue amongst employees as many are struggling to juggle work, home and family obligations.

Craig Brood characterized this phenomenon as technostress. The idea of technostress is that the computer revolution has had a number of negative consequences for human health, including increased levels of stress and anxiety. Technostress can cause us to become stressed out and overwhelmed, and it can also lead to other problems like addiction and distraction. We need to be aware of the dangers of technostress and take steps to avoid it, especially in an environment where work and private happen simultaneously in a digital world.

By being productive, we can create a sense of satisfaction and fulfillment in our lives [Csikzentmihalyi1990] but it is difficult to be productive in an environment that isn't conducive to it.

"To overcome the anxieties and depressions of contemporary life, individuals must become independent of the social environment to the degree that they no longer respond exclusively in terms of its rewards and punishments. To achieve such autonomy, a person has to learn to provide rewards to herself. She has to develop the ability to find enjoyment and purpose regardless of external circumstances." [Csikzentmihalyi1990]

We argue that it is more important now than ever to design systems for a productive life, especially because at the same time, the new work and study environments that we find ourselves in as a consequence of the digital revolution, require us to become more self-structured. This absence of an imposed guidance means that the competent worker has to create the order himself and learn to self-regulate [Piers2007] regardless of the physical location and circumstances and create products that inspire us to be productive. We need to form environments that are conducive to productivity, and we need to have attitudes about productivity that support us in our endeavors. We also need to have social media platforms that don't distract us from our goals, and we need to be aware of the dangers of technostress so that we can take steps to avoid it.

Chapter 2

Theoretical Grounding

<https://solvingprocrastination.com/why-people-procrastinate/> <https://solvingprocrastination.com/procrastination-types/>

2.1 Productivity

Personal and Private Productivity

Productivity is a very broad chapter and while there is not one definition of productivity that general consensus agrees upon, the most common definition of productivity is the amount of output per input or, very generally speaking, Productivity can be defined as the amount of work accomplished in a specific time period, or, by how many tasks are completed in a day.

”At the corporate level, productivity is a measure of the efficiency of a company’s production process, it is calculated by measuring the number of units produced relative to employee labor hours or by measuring a company’s net sales relative to employee labor hours.” [Kenton2022Aug]

In order to deconstruct the nebulous nature of the concept of productivity, Kim et al

[Kim2019May] examined how knowledge workers conceptualize personal productivity in both work, as well as non-work contexts. The researchers conducted a two-week diary survey and then semi-structured interviews with 24 knowledge workers. The participants in the study recorded what productive activities they had engaged in and why they believed those activities were productive. They did this in order to provide evidence for the usefulness of productivity ratings.

Surprisingly, they reported a wide range of productive activities beyond a typical desk job - from ”hanging out with dad” to ”going to the hairdresser”.

What constructs personal productivity

Kim et al [Kim2019May] identified four factors constituting the work productivity:

Concrete output and progress, and conceptual performance refer to material and immaterial forms of task performance, respectively.

By producing tangible results, such as implementing new features, creating design artifacts, or documenting design ideas, participants began to perceive the task as productive. Solving problems or making tangible progress from meetings was also

considered productive (for example, making decisions on agenda items). Additionally, conceptual outcomes such as gaining insight, developing ideas, and acquiring knowledge contributed to productivity. In his exit interview, P9 said, "When I learn a new concept, I am proud of it, but that sense of progress may be illusory.. Many such cases have turned out to be very productive. "

Both quality and quantity were important factors in evaluating the performance of an individual's work. Poor quality output made participants feel less productive and stressed. This is because it can impede progress or require additional tasks. P19s were sensitive to the timeliness of the counseling session (e.g., 'Insights [given to the client and completed on time] - were very productive'). Personal condition during or after the activity influenced how participants perceived their performance and productivity. Participant he conquered three major states. Attention and distraction, emotional and physical states. Attention refers to the state in which participants were able to focus on their task. Participants recorded various psychological responses to the task. B. Tired, happy, or depressed.

Participants appreciated activities that could benefit their careers, relationships, well-being, or finances. For example, going to the gym when tired was thought to be productive, regardless of exercise intensity. Happiness and financial reward benefits were associated with productivity. Participants considered their activities to be productive if they had a positive impact on their relationships with family and colleagues. Financial activities such as refinancing and early ticket purchase were perceived as productive as they provided economic benefits to participants. The productivity of religious activities was measured by the spiritual benefits they Personal productivity takes into account the personal importance, the personal value that the individual puts on the tasks that are being completed. To conclude, personal productivity is not just a measure of economic performance but how efficiently one is able to complete tasks that are subjectively important to oneself and therefore getting him or her closer to living the life he or she wants. We argue therefore, that personal productivity is one of the most important aspects of life satisfaction.

Productivity as personal freedom

Personal productivity is a matter of personal freedom, given that the measurement for success is ones own prioritization, which allows one to be in control of his or her life and achieve what is important to him or herself. An individual is free to choose the tasks that he or she wants to complete and the way that he or she wants to complete them. One is also free to set his or her own goals and to determine his or her own priorities. This allows the individual to be in control of his or her own life and to achieve what is important to him or herself.

Personal productivity therefore has an intrinsic value, not just to achieve goals for the sake of achieving them but to improve mental health, reduce stress and improve sleep quality. Productivity is an important skill for everyone to have, whether you are at work or at home. By understanding the differences between work and personal productivity, you can better focus on achieving your goals in a more effective way

2.2 Procrastination

Procrastination has long been considered a productivity killer, and recent research has demonstrated that procrastination can have a significant impact on productivity.

Studies have shown that people who procrastinate are more likely to miss deadlines, be less productive at their jobs, and experience higher levels of stress. This can lead to negative feelings about self worth which in turn can worsen symptoms of procrastination

Definition of procrastination

Procrastination is generally considered to be an irrational tendency to delay tasks or assignments despite the negative consequences of such postponement for individuals and organizations[hen2018causes] [lay1986last] or "a prevalent and pernicious form of self-regulatory failure that is not entirely understood" Mentions of procrastination have been found in some of the earliest records available, dating back more than 3000 years. [Piers2007]

Commonality of procrastination

Procrastination is considered a common behavioral pattern, and there is a growing body of literature discussing this complex phenomenon.[Yan2022] Research shows that about 80-95 percent of college students procrastinate to some degree, about 75 percent consider themselves procrastinators, and about 50 percent are consistently problematic procrastinators. [Steel2007]

2.3 The reasons why people procrastinate

2.3.1 Procrastination as a multi-faceted phenomenon

Despite the advancements in research and development of procrastination measurement, Haghbin [Haghbin2015] claims that current methods still fail to account for the multidimensional nature of procrastination behaviour and the multifaceted problems associated with it. Procrastination is not a simple trait or behavior, but rather is comprised of an array of interrelated elements that interact to create a complex system. By understanding the nuances of procrastination and its various features, researchers can devise more accurate measures that better reflect the entirety of procrastination behavior. In tandem with this research, practitioners also need to work within institutions and organizations in order to create effective interventions that address underlying causes and target particular aspects of procrastination.

The inability to capture the multifaceted nature of procrastination behaviour when evaluating procrastination in intervention research and clinical settings calls into serious question the validity of current measurement procedures. The complexity of procrastination can only be adequately assessed by taking into account a variety of factors, such as the interrelated elements that contribute to the overall system.

The Steel's Equation is a cognitive model that seeks to address procrastination and the causes behind it. Developed by psychologist Piers Steel in 2007, this equation proposes four main components that contribute to procrastination:

expectancy, value, impulsiveness, and delay.

2.3.2 Steels Procrastination equation

Steel's theory of procrastination equation states that an individual's tendency to procrastinate is determined by the ratio between the perceived pleasure and effort of a task. When this ratio is low, people are far more likely to delay or avoid completing the task. The equation takes into account both anticipated and impulsiveness in regards to task completion. For example, an individual who is highly impulsive may actually find pleasure in a difficult task and thus be more likely to tackle it immediately instead of procrastinating. Alternatively, someone of low impulsiveness may view a seemingly easy task as too time-consuming and not worth the effort, leading to delayed or avoided completion. Ultimately, the equation can be used to predict the likelihood of an individual procrastinating in any given situation. By understanding and accounting for factors such as pleasure, effort, impulsiveness, and anticipated reward, it is possible to gain greater insight into why certain tasks are more difficult or prone to delay than others. As such, Steel's theory provides a useful tool for addressing procrastination and improving productivity.

By understanding how these individual elements interact, it is possible to develop strategies to increase pleasure or reduce effort in order to encourage task completion. With the right adjustments, it may even be possible to completely eliminate, procrastination from an individual's life. [Steel2007]

Steel's theory can also be used to understand the potential effects of procrastination on an individual's life. For instance, procrastinating on important tasks may lead to negative consequences such as missed deadlines or lower grades in school. Furthermore, it can have a long-term impact on overall productivity and career advancement. It is therefore essential to address and overcome procrastination in order to achieve success. By understanding and applying Steel's theory of procrastination equation, it is possible to gain a better understanding of why we procrastinate and make the necessary changes to improve our productivity and quality of life. Through this approach, it is possible to not just reduce or avoid procrastination but more importantly to embrace and enjoy the tasks ahead. Not only can Steel's theory be used as a tool for addressing procrastination, but it also provides valuable insight into how people make decisions in general. By understanding the factors that lead to task avoidance or completion, it is possible to gain a better understanding of why certain decisions are made and how those decisions may impact our lives. As such, Steel's theory can be seen as a valuable tool for improving decision-making in all aspects of life. Ultimately, the equation provides an important insight into why we procrastinate, giving us the tools to make better choices and lead more productive and fulfilling lives.

2.3.3 Expectancy

Expectancy refers to an individual's beliefs about their ability to complete the task at hand. A high expectancy implies that the individual believes they are capable of completing the task and will be successful in doing so, while a low expectancy suggests that the person does not believe they can reach their desired outcome. [Steel2007]

Negative thoughts and procrastination

A strong correlation between procrastination and fear of failure has been observed. [Flett2012Dec] Flett et al [Flett2012Dec] discovered a strong correlation between individuals that score highly on the MaSQ(a 77-item self-report questionnaire that assesses depressive) anxious and mixed symptomatology, and a tendency to procrastinate. The study suggests a strong correlation between automatic thoughts about procrastination and broader negative automatic thoughts about ourselves. This means that individuals who have negative thoughts about themselves are more likely to procrastinate, and vice versa. This information may be useful in helping people understand why they procrastinate and how to address the issue.

It is interesting to note that individuals who are prone to stress and anxiety may view their procrastination tendencies as a personal shortcoming. This is because they may focus on the negative consequences of their actions, such as the feeling of guilt or anxiety that comes with delaying a task. In this sense, procrastination can be seen as a vicious cycle in which individuals feel bad about themselves for not meeting their goals, which only leads to more procrastination.[Flett2012Dec]

The fact that there is a link between procrastination and stress [Sirois2013Feb] is not surprising, due to the consequences of procrastination. More interesting though, is the fact that previous research found a correlation between procrastination and lack of self compassion [Sirois2013Feb] Consequently, since people who struggle with procrastination may also find it difficult to be compassionate about themselves. Procrastination leads to negative thoughts and feelings about oneself, which can then lead to the urge to procrastinate even more.

Procrastination as a self fulfilling prophecy

To conclude,the research points to the phenomenon, that individuals who expect to fail at a task are more likely to procrastinate as they attempt to avoid the feelings of disappointment, frustration, and even shame that come with failure. This is because they lack the motivation to put in the effort required to complete the task, believing that their efforts will lead them nowhere. By avoiding the task altogether, they can protect their ego from potential failure.

2.3.4 Delay

Only the present moment is immediately experienced by people. experiences of the past, present, other locations, people, and alternate realities are psychologically impossible. Nevertheless, our thoughts, feelings, plans, forecasts, hopes, and counterfactual alternatives fill our minds, shape our decisions, and direct our behavior. How do we get beyond the present to take into account distant entities? How do we make long-term plans, consider other people's perspectives, and account for speculative alternatives to reality?

According to the Construal Level Theory (CLT), humans can accomplish this by creating abstract mental construals of distant objects. Thus, despite the fact that we are unable to experience that which is not present, we are nonetheless able to foresee the future, recall the past, speculate about what may have been, and recall the reactions of others. Memory, hypothesis, and predictions are all mental constructs

that aren't based on actual experience. They symbolize psychologically remote items and help us see beyond the current circumstances. A person's subjective perception of something's proximity to or distance from them in the present moment is known as psychological distance. Thus, psychological distance is egocentric: Its focal point is the present-tense self, and the various ways in which an object could be distanced from that point—in terms of time, location, or social distance—constitute several degrees of psychological distance there is marked commonality in the way people respond to the different distance dimensions.

Thus, according to CLT, people overcome different psychological distances by using similar mental construction processes.

Different aspects of psychological distance have been studied in isolation from one another, using different methods and theories to do so. Tipping points in human evolution include the development of tools that require planning for the future. Creation of feature-specific tools that require consideration of hypothetical alternatives. Awareness development that allows distance and perspective perception;

There is marked commonality in the way people respond to the different distance dimensions. The multidimensional nature of procrastination means that it can be understood in terms of different dimensions or aspects. For example, an event might be seen as being more distant on one dimension (such as time) than another dimension (such as importance). To respond to an event that is increasingly distant on any of those dimensions requires relying more on mental construal and less on direct experience of the event.

As the psychological distance increases, the interpretation becomes more abstract, and as the level of abstraction increases, so does the psychological distance that people envision. The constructive level broadens or narrows the field of view of the mind. Since these results are communicated constructively, differences in distance should influence predictions, ratings, and actions as well. [Trope2010Apr]

2.3.5 Value

Value according to pierce steel defines the importance of something to an individual or the amount of effort an individual is willing to spend to acquire something. Every task has a value and a task is aversive if the value is lower than the effort needed to complete it. The value of a task could be the enjoyment of the task itself or the value of the outcome of the task. The value of a task can change over time and can be influenced by external factors such as changing economic conditions or technological advances. the value of a task can also be influenced by the individual's perception of the task. Value can also be measured by the amount of effort an individual is willing to spend to acquire something. A person may be willing to invest more money or time into obtaining an item if it is perceived as being highly valuable, but may not be as motivated for an item that has less value. Thus, different people can assign different levels of value to the same thing depending on their own preferences and beliefs. Ultimately, value is a subjective concept that is determined by individual perception.[Steel2007]

Value and Task Aversiveness

Task aversiveness is the degree to which an individual perceives a task to be difficult, unpleasant, or challenging. It is typically assessed by measures of cognitive

difficulty, effort expenditure (physical or mental), and frustration. Task aversiveness may also encompass subjective evaluations of task value, relevance, and importance. Aversiveness can have an impact on task performance, with highly aversive tasks being more prone to errors and decreased productivity. Furthermore, prolonged exposure to aversive tasks can lead to burnout, with individuals exhibiting diminished motivation and engagement. Factors such as task complexity, ambiguity of task requirements and expectations, regimen of reinforcement or reward strategies employed for the individual completing the task may all influence the degree of task aversiveness experienced by an individual.

The term “task aversiveness” was first introduced by psychologist Julian B. Rotter in 1954. He defined the concept as “the degree to which an individual perceives a task to be difficult, unpleasant, or challenging”. Since then, the concept has been studied extensively and expanded upon.

Rotter’s original framework considers both cognitive and affective factors in assessing task aversiveness. Cognitive factors include individual judgment of the difficulty, complexity, or effort of completing a task, while affective factors such as frustration, boredom, anxiety are also taken into consideration. [Rotter1954]

The Matching law

2.3.6 The Matching Law

The Matching Law, also known as the Principle of Reinforcement or Herrnstein’s Law of Effect, is an important concept in behavioral economics. It states that the strength of a particular response (e.g. pulling a lever) is directly proportional to the strength of the stimulus (e.g. being given food). It states that an individual’s preference for one alternative over another can be accurately predicted if the frequency (or probability) and magnitude of rewards (or reinforcers) associated with each alternative are known. Simply put, it states that when two or more alternatives are present, the individual will tend to select the alternative with the higher ratio of reward to cost. This concept is especially important in situations where an individual must decide between competing activities, such as work and leisure. It can also be used to understand how individuals make choices in markets with multiple products, services, or stores. The Matching Law provides an important insight into how people make decisions, and can be used to better inform public policy decisions. As such, it is a valuable tool for economists and policymakers alike. This law is also applicable to procrastination, as it suggests that the more motivation and value an individual places on a task, the more likely they are to put forth effort towards achieving their goals.[Poling2011Apr]

This concept has been connected to the concept of System One and System Two Thinking, introduced by Nobel Prize winning economist Daniel Kahneman.

Hyperbolic Discounting

The concept of hyperbolic discounting was first described by Ainslie, it is implied in Richard Herrnstein’s “Law of Matching”. Hyperbolic discounting is when people choose a smaller, sooner reward over a bigger, later reward. This happens because the person values the smaller, sooner reward more than the bigger, later reward. Hyperbolic discounting can lead to procrastination because it leads us to prefer taking

the easier, quicker route instead of the route that will be more beneficial in the long run. Ainslie proposed that when given a choice between two rewards, people tend to choose the sooner, smaller reward over the delayed, larger one, because humans (and animals) irrationally place more value on the current reward rather than the potential one in the future. This phenomenon can be explained using two factors: temporal distance and amount of reward. He observed this phenomena by making Pigeons choose between 2 and 4 seconds of grain approach in a separate two-button test procedure, with the larger dose always being presented 4 seconds later than the smaller one. All subjects reversed their preference from small early reinforcement to large late reinforcement, as the delay between selection and availability of small reinforcement varied from 0.01 s to 12 s. The priority-reversed delay values were nearly consistent with the adaptive law adapted to the delay gain. Hyperbolic discounting can lead to procrastination as it encourages people to take the easier, quicker route rather than the one that will be more beneficial for them in the long run. [Ainslie1981Dec]

System One and Two

Daniel Kahneman explores the concept of procrastination in his book *Thinking, Fast and Slow* and offers insight into why we so often put off tasks. Kahnemann describes two distinct systems that govern our decision-making: System One and System Two.

System one and system two thinking refer to the two distinct ways in which humans process information. System one is often referred to as “fast” or “intuitive” thinking, while system two is known as “slow” or “computational” thinking.

System one thinking involves quick reactions to stimuli and does not require a lot of cognitive effort. It is based on the neural pathways that have been built up over time, such as Pavlovian conditioning. System one thinking is used for tasks that are familiar or have been learned through repeated experience, such as recognizing faces or predicting what someone will say next in conversation.

System two thinking, on the other hand, requires more cognitive effort and is used for tasks that are new or unfamiliar. It takes more time to process information through system two thinking as it involves more complex calculations and problem-solving. It is often used for activities such as solving mathematical equations or writing a research paper.

System one and system two thinking both have their advantages and disadvantages. System one thinking can be useful for quickly responding to a situation or making decisions without much thought, but it can also lead to biases and errors in judgement. System two thinking requires more cognitive effort but has the potential to yield more accurate results.

Generally, our instinctive System 1 is the one that makes us procrastinate, causing us to prefer short-term rewards, such as pleasure and immediate gratification over long-term goals. At the same time, System 2 can help us put in place strategies that combat this tendency towards procrastination by forcing ourselves to focus on the task at hand.[Kahneman2011]

Piers Steel argues that procrastination occurs when system one becomes too dominant, and system two is not able to override system one’s decision.[Steel2007]

Classical Conditioning

2.3.7 Classical conditioning

Classical conditioning is a learning style that became famous in the late 19th century. Ivan Pavlov's experiments with dogs have since been applied to many areas of psychology.

Pavlov fed the dogs and measured their saliva answer. Pavlov started ringing the bell just before offering the food. After the dog has been given a number of food-bell presentations, Pavlov noticed that the dog would salivate when the bell rang, even though no food was offered. Pavlov called this the conditioned reflex. The dog had learned to associate the bell with food, and the bell became a conditioned stimulus.

Classical conditioning occurs when instinctive drive responses are associated with new stimuli. A stimulus to which an organism responds without training is called primary or unconditioned stimulus. A stimulus that does not elicit a response until it is associated with a primary stimulus is called secondary or conditioned stimulus. The response to a primary stimulus is called unconditioned response. The response to a secondary stimulus is called conditioned response. By pairing an unconditioned stimulus with a previously neutral stimulus, it is possible to create new connections between stimuli and responses that may not have existed before. Through careful manipulation of the environment, classical conditioning can be used to alter behavior in a variety of ways. By understanding the principles of classical conditioning, it is possible to develop more effective therapeutic techniques for individuals dealing with procrastination.[Rehman2022Aug] Classical conditioning is an example of System One (or "automatic") thinking. This type of learning occurs quickly and without conscious effort, allowing a subject to respond to stimuli in the environment without having to think about it. By contrast, System Two (or "controlled") thinking involves more deliberate mental processing, as well as the application of specific strategies to solve problems. Whereas System One learning is an unconscious process, System Two thinking requires active engagement and effort. Classical conditioning involves pairing a previously neutral stimulus with an unconditioned stimulus that produces a particular kind of response. This happens quickly, without the need for conscious thought, which makes it an example of System One thinking. By associating specific stimuli with particular responses, classical conditioning can be used to influence behavior in a variety of ways. It is important to note, however, that the effects of classical conditioning are short-lived and may not persist over time. Therefore, it is important to use this method in combination with other strategies such as System Two thinking in order to achieve more lasting

Mihaly Csikszentmihalyi, author of *Flow: The Psychology of Optimal Experience*, discussed the idea of productivity in terms of having a sense of control over one's work and the ability to engage in it fully. According to Csikszentmihalyi, productivity is not about working hard or long hours, but rather about achieving a state of flow in which you are completely absorbed in your work.