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Towards a science of action - concepts and theories
to reduce procrastination and overcome the intention-action-gap

Abstract

This paper aims to shed light on concepts and theories to support reducing procrastination and overcoming the intention-action-gap. People are drivers of change, innovation, and progress, energetic employees that take initiative drive innovation and a pro-active approach towards life supports health and life satisfaction. However, procrastination can get in the way, postponing decisions and actions and not getting things done. If the demotivating and hindering factors are greater than motivation and self-control, then we procrastinate. Procrastination leads to a gap between how we intend to act and how we act in reality which also called knowing-doing-gap, intention-behavior-gap or intention-action-gap where we have formulated an intention but do not follow through and take action. Only 30% to 40% of the variation in behavior can be predicted by intention but the question remains what can help alter the remaining 60-70% of behavioral change.

This is why this paper sets out to better understand which concepts and theories could help explain those 60-70% of behavioral change and move towards a science of action by investigating systematically potential contributions from different domains. As a starting point, this paper examines four theories in details, nudging theory from the domain of behavioral economics, dealing with negative inner voices and how insights from the domain of neuroscience help to get distance and perspective, insights from positive psychology with character strengths and the science of well-being, and insights from chronobiology and chronotypes to better manage physical, mental, and emotional energy.

In addition, this paper provides further concepts and theories such as emotional self-regulation for better self-control, knowledge visualization for better dealing with cognitive and information

overload, boundary setting for better ways to deal with distractions, and design thinking applied to life through the concept of life design.

With this, the paper aims to contribute to the discourse of procrastination and the intention-action-gap by providing a starting point for a discussion of the science of action which will hopefully inform researchers and practitioners to better understand the underlying mechanisms of procrastination and strategies to overcome them to benefit the individual, organizations, and the society at large.

Keywords: Procrastination, intention-action-gap, science of action

1 Introduction

People are driving change, innovation, and progress in themselves, in organizations, and in society. In fact, energetic employees that are willing to take initiative drive innovation and a proactive approach supports health and life satisfaction (Grant & Ashford, 2008; Peng & Wu, 2021).

However, sometimes instead of acting proactively people procrastinate and do not do what they intended to do. Procrastination is the act of unnecessarily postponing decisions or actions (Lay, 1986). Self-control and motivation are keys to getting things done. Opposed to getting things done are demotivating factors, such as fear of making mistakes, or hindering factors, such as exhaustion or rewards that are too far away in the future. If the demotivating and hindering factors are greater than motivation and self-control, then we procrastinate (Rozenal & Carlbring, 2014). This causes us to fail to self-regulate our behavior, which means that we postpone things unnecessarily, even when we know we should be doing them, which is why procrastination often leads to a gap between how we intend to act and how we act in reality (Rozenal & Carlbring, 2014). This gap is called knowing-doing-gap (Pfeffer & Sutton, 2000), intention-behavior-gap (Sheeran & Webb, 2016; Sniehotta, Scholz & Schwarzer, 2005) or intention-action-gap (Kuo & Young, 2008) where we have formulated an intention but do not follow through and take action.

While these gaps are relevant and critical for behavioral change, they are only partially understood. Data suggests that intention predicts (only) a mere 30% to 40% of the variation in behavior (Armitage & Conner, 2001; Rhodes & de Bruijn, 2013). So, the questions remains what can help alter the remaining 60-70% of behavioral change.

A starting point could be to better understand why people procrastinate and find suitable concepts and theories that help address those reasons. The reasons for procrastination are

manifold, examples are feeling overwhelmed and overloaded, tiredness and lack of energy, laziness and boredom, lack of interest and excitement, unawareness of strengths, distractions, perfectionism, anxiety, fear of failure, lack of social support and negative inner voices (Rozenal & Carlbring, 2014).

However, procrastination can be overcome by either increasing motivation and self-control, which refers to having more jumping power to cross the intention-action-gap. Or less demotivating and hindering factors, which relates to reducing the gap so that not much jumping power is required to overcome the intention-action-gap.

In this paper, we provide concepts and theories to respond to the reasons for procrastination by increasing motivation, self-control and jumping power such as the use of character strengths and signature strengths from Positive Psychology as well as chronobiology and energy competence. We also provide concepts and theories to respond to the reasons for procrastination reducing demotivating and hindering factors, such as nudging theory with automatic unconsciously bypassing obstructing factors as well as reducing negative inner voices.

2 Key concepts

The following concepts can contribute to a better understanding on how to overcome the intention-action-gap, to reduce procrastination and to build a science of action. These concepts and theories are taken from a broad range of disciplines and are explained in this chapter in more detail as in what they are and how their lens and perspective could make a contribution. These concepts and theories are: (1) nudging theory, (2) positive psychology, (3) chronobiology and energy competence, and (4) dealing with negative inner voice using insights from neuroscience.

2.1 Nudging theory

All too often people fail to turn their thinking into action and make changes because they are tied to the status quo and prefer to keep the existing standards and follow existing structures and be comfortable in the human laziness. They find it hard to break out from existing routines and despite what would be better, keep the existing flow of things. There is one strategy that is not only moving around that laziness but uses the human laziness to subconsciously alter behavior which is called nudging.

Nudging theory from the domain of behavioral economics uses laziness to help individuals change their behavior. According to many experiments in psychology, Daniel Kahneman found that human beings make their decisions based on two systems: System 1 which is the fast, automatic, and subconscious system, as well as system 2 which is the slow, reflexive, and conscious system; these two systems are also what is referred to as thinking fast and thinking slow (Kahneman, 2012). Apparently, human beings make 70-80% of their decisions through the fast system which they may not even recognize since it is the subconscious system.

Nudging was developed by Prof. Thaler and Prof. Sunstein as a way to hack into the fast system and affect human decision making and behavior change on a subconscious level. Nudging is applied in many areas to affect behavior such as ecommerce called digital nudging (Weinmann, Schneider & Vom Brocke, 2016; Mirsch, Lehrer & Jung, 2017), healthy behavior (Quigley, 2013; Vlaev, King, Dolan & Darzi, 2016) and healthy lifestyle (Ledderer, Kjær, Madsen, Busch, Fage-Butler, 2020) as well as affecting behavior in meetings (Eppler & Kernbach, 2021).

Nudging offers many principles to help overcome laziness of human beings and is therefore suitable to help overcome the intention-action gap and to reduce procrastination. The following

six principles warrant the potential to better turn thinking into doing. The nudging principles are as follows: (A) the power of default, (B) pre-structuring, (C) signaling, (D) making feedback visible, (E) fun factor, and (F) anticipating and preventing mistakes.

(A) The power of default: This principle relates to the fact that humans like to follow any given standard and rather avoid choosing something other than the standard. This principle becomes visible in an international case of organ donation. While Germany has more than 80 million inhabitants, it has only very few organ donors, Austria with around 8 million inhabitants has much more organ donors. However, this was not a conscious decision by Germans or Austrians. Because the standard in Germany when you are born is that you are not automatically donating your organs while in Austria the standard is that you are donating your organs. In both cases, the majority of people choose to take over the standard and not move around it to choose another option. Therefore, behavior can be changed by consciously designing or changing standards that lead to overcoming the knowing-doing-gap.

(B) Pre-structuring: Another way to nudging is pre-structuring a process because human beings like to follow pre-given procedures on auto-pilot. Therefore, behavior can be changed by pre-structuring a morning routine or any other given task to better move from thinking to doing.

(C) Signaling: By creating signals in the environment that are visible to humans, one can also alter behavior. For example, writing a note about a certain activity and putting it next to the computer screen, so that it is in sight, will make it more likely that one does this activity. The Olympic Gold medalist Breeja Larson put her goal as her password of the computer, so that

every time she logged in, she would repeat and signal to herself what her goal was. Using signals can help for action-taking.

(D) Making feedback visible: One way to alter behavior is to make feedback visible. A famous example of this principle is the speed signs that show the current speed of a car passing by, sometimes in addition with a positive or negative smiley or a thumbs up or down. One way to use this principle is to make progress visible which builds self-efficacy and motivation to keep going.

(E) Fun factor: A beautiful way to change people's behavior subconsciously is to use fun as an important factor. For example, in order to motivate people to take the stairs and not the elevator, they turned the steps into a keyboard, so that every step would create a sound to make walking more fun. This perspective can help to make even boring tasks more fun in order to get things done.

(F) Anticipating and preventing mistakes: This way of nudging tries to anticipate mistakes before they happen. For example, in recycling bins the opening is designed in a way that plastic bottles do not fit where they should not be, e.g., paper. In meetings people tend to forget their to-dos and do not follow up on them. One nudge to overcome this is called "Silent Finish" in which at the end of every meeting, every participant gets 5-10 minutes to write down their to-dos and even start them with a first initial step which makes it easier to continue afterwards instead of starting from scratch. For overcoming the intention-action-gap, this nudge could be beneficial.

Overall, the nudging theory with its ability to hack into the subconscious system 1 offers a variety of options to nudge oneself and others into a different behavior to overcome and use human laziness and therefore is a good candidate to contribute to the science of action.

2.2 Positive Psychology

Positive Psychology offers a valuable perspective to overcome the intention-action-gap and increase interest and excitement for many reasons. It started in 1998 when Martin Seligman became president of the American Psychology Association with the aim to help people to strengthening their strength and to increase life satisfaction and well-being. Central to the concept of Positive Psychology is the assessment and use of character strengths and more particularly the use of a sub-set of character strengths which are called signature strengths which are very inherent to the individual. In addition, the achievement of well-being is central with its five core elements called PERMA: P for Positive emotions, E for engagement, R for relationships, M for meaning, and A for accomplishment (Seligman, 2012).

Therefore, the focus within Positive Psychology with regards to taking action is on (A) signature strengths and based on the four particular character strengths under the virtue of courage, which are emotional strengths that help overcome internal and external barriers to achieving a goal through the exercise of willpower (Peterson & Seligman, 2004), the strengths of (B) zest and enthusiasm, (C) perseverance and persistence, (D) bravery and facing fears, and (E) honesty and authenticity.

(A) Signature strengths: Signature strengths are a sub-set of the 24 character-strengths that are most central to who the person is and best capture their uniqueness and essence (Niemiec, 2018). Every person has 3-7 signature strengths which are also more likely to be energizing to use and more natural to express than the other strengths in the person's profile. Character strengths in general and signature strengths in particular are about being and doing. They are "being" since

they shape our identity, understand who we are and help to be ourselves. They are also “doing” since Positive Psychology is not only about thinking and being but expressing the strengths into the world, taking action, and doing the good by putting our values into action (Niemiec, 2018).

Signature strengths can be identified by applying the following criteria to the list of character strengths. A character strength becomes a signature strength when one has an intrinsic motivation to use, one feels very authentic when using it and would even say “this is me” when referring to the description of the strengths, usually has a strong learning curve, it is rather activating than tiring, and ultimately, it is used so automatically that it is almost impossible to not use it (Seligman, 2002).

The use of character strengths in general and of signature strengths in particular supports the development of engagement and flow as part of the five PERMA dimensions of well-being, E for engagement (Seligman, 2012). Disengagement and lack of interest is one of the reasons to procrastinate and being stuck in intention-action-gap. Using signature strengths help to increase engagement and overcome procrastination and the intention-action-gap. Using signature strengths is connected with an increase of work engagement, productivity, work satisfaction and work-as-a-calling (Harzer & Ruch, 2015, 2016; Lavy & Littman-Ovadia, 2017). In a 3-year analysis of employees, the use of signature strengths was one of the most crucial drivers for employee engagement (Crabb, 2011). In this way, knowing and applying one’s signature strengths warrants to increase engagement to overcome procrastination and the intention-action-gap.

(B) Zest and enthusiasm: Zest is defined as approaching life with excitement and energy, not doing things half-way or half-heartedly, living life as an adventure, feeling alive and activated. While it is consistently one of the top two character-strengths most associated with life

satisfaction, it is one of the least endorsed character strengths around the world. Zest is highly connected with engagement, meaning, work-as-a-calling, health behaviors and work satisfaction. By increasing zest and enthusiasm, one has more excitement, energy, and vitality to get things started and overcome procrastination.

One study showed that sharing positive events with others (compared to not sharing) boost zest and energy. More frequent sharing of positive events lead to even great vitality, also 3 weeks later (Lambert, Gwinn, Fincham & Stilman, 2011). Another study showed that going outside, especially in nature, e.g., taking breaks outdoors or going for a walk through the forest, boosts zest and energy (Ryan et al., 2010).

(C) Perseverance and persistence: Perseverance is defined as finishing what one starts, persisting in a course of action despite obstacles, ‘getting it out the door’, and taking pleasure in completing tasks. It involves effort for a task and duration to keep going with that task. It is one of the strengths most associated with high levels of engagement. It shows repeatedly in studies to support various types of achievement. By cultivating perseverance, one has the ability to get things started and to keep going even in the face of barriers which is one way to overcome procrastination and turn thinking into action.

One way to cultivate perseverance is making positive reappraisals of adverse events, for example, practicing seeing the good, positive, or meaningful and what can be learned from it which maintains a mentality of “keep going” (Littman-Ovadia & Lavy, 2016; Diener, Lucas & Scollon, 2006). Another way is instead of focusing on a desired outcome, rewarding and reinforcing effort by giving positive feedback to oneself and others around focus, effort and energy put on a task and the process (Dweck, 2006; Peterson & Seligman, 2004).

(D) Bravery and facing fears: Bravery is defined as not shrinking from threat, challenge or difficulty or pain, speaking up for what is right and acting on convictions even if unpopular.

Acting brave builds resilience as challenges are overcome and active coping skills are built. By acting brave, one can overcome procrastination and the intention-action-gap.

Practicing bravery can be done by focusing on the outcomes of a courageous act such as thinking of a person being helped, reminding oneself of the goodness of the action, or what one will have accomplished (Pury, 2008). Another way to support bravery is to label oneself or others as brave or courageous, if there is an appropriate reason for it, as this increases psychological bravery (Hannah, Sweeney & Lester, 2007).

(E) Honesty and authenticity: Honesty is defined as speaking the truth but more broadly presenting oneself in a genuine way and acting in a sincere way, being without pretense and taking responsibility for one's feelings and actions. Honestly allows for a more accurate self-assessment of your attentions and commitments to others and oneself. It is linked with self-concordance which is the extent to which the goals accurately represent implicit interests and values. Honestly can help overcome the intention-action-gap and procrastination by making goals that are true to the self and creating more accurate action plans while taking responsibility to follow through.

Honesty and authenticity can be supported by encouraging oneself and others to behave with a full sense of the available choices and ways of self-expression in mind (Sheldon, Ryan, Rawsthorne & Illardi, 1997). They can be further supported by encouraging oneself to consistently express oneself across different settings such as working in the office and being at home (Sheldon et al., 1997).

Overall, the use of character strengths and signature strengths have in common that they support building sustainable positive emotions. The broaden-and-build theory in positive psychology suggests that positive emotions, such as happiness, interest, and anticipation, broaden one's awareness and encourage novel, exploratory thoughts, and actions (Frederickson, 2001). Over time, this broadened behavioral repertoire builds useful skills, psychological resources, and self-efficacy. Self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments (Bandura & Schunk, 1981). Self-efficacy reflects confidence in the ability to exert control over one's own motivation, behavior, and social environment. Therefore, using character strengths in general and signature strengths in particular helps to develop positive emotions, repeatedly done encourages novel and exploratory thoughts which create self-efficacy which helps to overcome procrastination and the intention-action-gap.

More specifically, independent from what one's individual character strengths and signature strengths are, using the four particular character strengths under the virtue of courage, such as zest, perseverance, bravery, and honesty, help to overcome internal and external barriers to achieving a goal through the exercise of willpower specifically (Peterson & Seligman, 2004).

In these ways, Positive Psychology provides interesting perspectives and makes a contribution to better understanding how procrastination and the intention-action-gap can be overcome.

2.3 Energy competence

The topic of chronobiology and energy competence helps individuals to overcome tiredness and be more consciously energetic to overcome the intention-action-gap. Chronobiology is the study of mechanisms underlying chronomes, structures in time, found in organisms, in populations,

and in the environment. Chronobiology suggests that people have different ways of how their energy unfolds throughout the day. This difference is caused and explained by different sleep patterns and different timings throughout the day which is also called chronotype. A chronotype is the natural inclination of your body to sleep and wake up at a certain time, or what most people understand as being an early bird versus a night owl. However, this dichotomous thinking is outdated, as chronotypes do not exist only as morning and evening type but consist of five different chronotypes.

Chrono type	Preferred get up time	Primetime	Preferred time to sleep
1	05.00-06.30	05.00-08.00	20.00-21.00
2	06.30-07.45	08.00-10.00	21.00-22.15
3	07.45-09.45	10.00-16.00	22.15-00.30
4	09.45-11.00	16.00-21.00	00.30-01.45
5	11.00-12.00	21.00-01.00	01.45-03.00

1 = Strongly distinctive morning type, 2 = Weakly distinctive morning type,
3 = Indifference type, 4 = Weakly distinctive evening type,
5 = Strongly distinctive evening type

Figure 1: Chronotypes (Home & Östberg, 1976)

Chronobiology, chronotypes, and what is also referred to as energy competence offers a broad range of ways to better manage the physical, mental, and emotional energy (Schwartz & McCarthy, 2007; Steiner, 2011). To overcome the intention-action-gap with energy, the focus within this field is on the followings topics: (A) prime time, (B) low time, (C) alpha time, and (D) calm energy. These concepts warrant to help overcome procrastination and move from thinking and intentions to action.

(A) Prime time: Prime time is the most valuable 2-3 hours per day, in which people have the highest performance because they have their highest physically, mentally, and emotionally energy. This time is suitable for tasks and projects that are important because in this time, people

are predestined to act proactively, create new things during this time and overcome things they usually procrastinate on (Steiner, 2011).

In this phase, people have their highest physical energy and therefore feel active and fit and can also achieve top athletic performance. People also have their highest mental energy, are mentally flexible and can deal with complexity well, so this time is also suitable for difficult decisions. In addition, people have their highest emotional energy, which means above average patience for the self, others and for the situation and the most willpower that is needed to do tasks that are not attractive or interesting. Knowing about prime time and protecting it is important to overcome procrastination (Schwartz & McCarthy, 2007).

The prime time is closely related to the chronotype and the get-up, see also figure 1. A morning type, e.g., chronotype 1 or 2, who wakes up at 5, 6, or 7 a.m. has the prime time right after the get-up time, some early risers can walk straight out of bed to their desk or go for a run. The later the chronotype is the longer is needed between waking up and prime time. While a chronotype 3 needs approx. 60-120 minutes to its prime time, with later chronotypes 4 and 5 it can take several hours (Home & Östberg, 1976).

So, knowing about one's chronotype and the according prime time supports motivation and makes self-control easier by knowing about and protecting one's prime time. This is the daily time for extra-ordinary physical, mental, and emotional energy that help to overcome obstacles and even address tasks one does not like to do because of high levels of willpower.

(B) Low time: One central component to better use the internal rhythm and enable the enjoyment of energetic prime times is to focus on the low time, to accept it and to use it for relaxation.

Research has shown that our thinking styles change throughout the day in 90-minute rhythms;

while the analytical, logical, and critical performance of our left hemisphere of our brain is used during prime time, low time is more suitable for using the right hemisphere of the brain for creative, intuitive, and holistic thinking (Klein & Armitage, 1979). Overall, our low time once a day of about 1-2 hours has these three functions. Mentally, it gives better access to creative thinking and the use of intuition. Emotionally, it increases our awareness of our mood and enables better empathy for the self and others. Physically, it is good for regeneration and relaxation, so that the upcoming prime time can be even more distinct.

Knowing about one's low time, accepting that it is important for our physical, mental and emotional energy and using it for relaxation and regeneration provides a balanced energy management throughout the day and enables a distinctive prime time for getting things done.

(C) Alpha time: The alpha time is the time in the day when people are half asleep and half awake which usually occurs in the morning when waking up and in the evening when falling asleep. During alpha time, the brain is activated in a particular way so that the mental focus is directed inwards which creates a dreamy and not really present mood. At the same time, our fantasy and ability to associate as well as the mental integration capacity are at high levels, so that this relaxing mood is very suitable for ideation and problem solving (Steiner, 2011).

Albert Einstein was such a big fan of alpha times that waiting for them to happen in the morning and evening was not enough for him, so he would cultivate naps in the afternoon with a set of keys in his hand. So that he could benefit from a mini alpha time when falling asleep but avoid falling into deep sleep since the keys would fall on the floor and make him wake up.

To conclude, alpha time is very good for intuitive thinking, imagination, creativity, and problem solving. This is beneficial when the reasons for procrastination are a lack of ideas or overwhelm,

knowing about and using those alpha times can contribute to overcoming the intention-action-gap.

(D) Calm energy: The concept of calm energy comes from the work of the energy researcher Robert Thayer, who differentiates between four basic states of energy and tension represented in the energy-tension-matrix (figure 2).

Energy	high energy	Excited Positive Calm Energy	Aggressive Hyper
	low energy	Cheerful Satisfied	Bad Negative
		relaxed	tense
		Tension	

Figure 2: Energy-tension-matrix (Thayer, 2003)

Accordingly, having a good energy competence is not only about having a lot of energy but also little tension. In the state of calm energy, one is mentally powerful, feels confident and is emotionally most resilient (Thayer, 2003). The chances of being in calm energy are the highest during prime time. Being close to a deadline and work an above-average amount of work is no longer calm energy but aggressive hyperactive energy which has high energy but also contains a high level of tension. Such energy-tension states are possible for a few days for a short time but not sustainable and can lead to mental health problems and burn-out if the duration is too long.

Fortunately, there is a number of small micro-activities that help to increase physical, mental, and emotional energy to achieve the state of calm energy. Some examples of those micro-activities are for physical energy, e.g., a short ten-minute movement, a small light snack or relaxation technique, for mental energy, e.g., raising awareness of why one does the task at hand,

creating a short-term objective and the method to act as if one was motivated, and for emotional energy, e.g., having an energizing social contact, getting something small done or distracting oneself.

Knowing about the interplay of energy and tension and that calm energy is the state of energy and tension to be relaxed but also activated provides an interesting perspective to overcome procrastination.

Overall, the domains of chronobiology, chronotypes and energy competence provide an interesting and effective perspective on helping people to overcome procrastination and the intention-action-gap. Knowing about one's chronotype, protecting one's prime time for those tasks that are usually subject for procrastination, enabling that prime time by regenerating during low time, using alpha time for ideation and problem solving as well as the notion of calm energy for being energetic, relaxed, and proactive offer fruitful perspective to the discourse of the science of action.

2.4 Negative inner voices

The art of talking to oneself and especially negative inner voices can lead to procrastination and represent an obstacle in overcoming the intention-action-gap (Rozental & Carlbring, 2014). By more proactively managing the inner voices, one can increase self-control and decrease the hindering factors of perfectionism or fear of failure coming from inner voices. The domain of neuroscience offers an interesting perspective and concrete interventions to better deal and

reduce the effects of our inner negative voices on our thinking and doing and thus reduce procrastination to better overcome the intention-action-gap (Kross, 2021).

According to neuroscience, the phonological loop is that part of the working memory that is managing verbal information. It has the inner ear which helps to retain words and the inner voice which allows to repeat word internally in our head, e.g., when practicing a speech. Our inner voice takes over external voices of our primary care takers such as parents and other people by mimicking what they say, first audibly, later by internalizing it in silent inner speech; the verbal stream coming from the outside turns into our inner voices and directs our behavior (Kross, 2021).

The working memory has limited capacity (Kolk, Chwilla, Van Herten & Oor, 2003). Whenever one engages in doing a task, the working memory is occupied by the task at hand and also the capacity the inner voice needs. Negative inner voices take away attention and focus and are distractive to the task at hand.

Our brain is a lens that we use to look at the world, and our inner voices are a button that we either zoom in or zoom out with. If we zoom in too much and have too little distance to a situation, so that we look at the situation with a tunnel vision and no longer perceive which alternatives are possible, then the negative voices in us can gain the upper hand and negative feelings like Stress, anxiety, and depression (Kross, 2021).

The central way to better deal with negative inner voices, to reduce distraction and better overcome procrastination is to know about and more consciously work with the distance to oneself and to the inner voices. Plenty of studies in neuroscience have shown how to create a healthy distance to the negative inner voices, to gain perspective and reduced intrusive thinking,

feel better and change their behavior positively (Kross, 2021). We therefore need ways in which we can zoom out with our voices and look at a situation from a distance in order to give ourselves a new perspective with this perspective. We need ways to look at the situation with a wide angle in order to find more constructive ways to deal with the situation. Zooming out can be a big challenge, especially in stressful situations, but it's worth it. Our brain is like a psychological immune system because we can change our thoughts by being more distant from the situation. That distance won't solve the problems, but it does make it much more likely that we can. We can see ourselves from a distance through our inner lens, our personal home theater so to speak (Kross, 2021). The following methods ensure better handling of our voices and can significantly reduce the negative voices: (A) Fly on the wall, (B) Solomon paradox and the 'outside view', (C) time traveler, and (D) she, he, and you instead of me.

(A) Fly on the wall: In a study, participants were put into two groups, one group of participants were the divers using their own eyes and the other ones were the spacers who looked at the situation in which a negative voice was predominant like a fly on the wall looking at everything from a distance. According to a study, the participants with the "fly on the wall" perspective led to fewer negative feelings, created a different, more benevolent story, made the inner voice more meek and reduced stress, hostility, and aggression (Kross, Ayduk & Mischel, 2005).

(B) Solomon Paradox and the 'outside view': King Solomon was known in Jerusalem for being able to give very sophisticated military advice and being very wise, so that people traveled from far and wide to get his advice. At the same time, he rarely or never applied this advice to himself and was ousted from the throne after various scandals. This phenomenon is therefore known today as the Solomon Paradox (Grossmann & Kross, 2014). But it also shows that we don't see

each other at the same distance as we see others. This is also what Daniel Kahneman refers to as avoiding the ‘inside view’ and adopting the ‘outside view’ leading to a broader sample of possibilities, more accuracy, better foreseeing obstacles and preparing accordingly (Kahneman, 2012). In order to gain more distance from your one’s own situation through the ‘outside view’, one may ask oneself what advice one would give to a friend who is stuck in one’s own situation.

(C) Time traveler: Mentally travelling into the future, say 10 years from now, and imagining how the situation one is suffering in today from an inner negative voice will feel like. This mental journey will give healthy distance and distance from today’s situation and will put worries and negative voices into perspective. Temporal distancing helps people to manage their stressors, like the loss of a loved one, and also smaller but critical ones, like a work deadline (Bruehlman-Senecal & Ayduk, 2015).

(D) She, he, and you instead of me: In a study in which participants had to give a presentation in front of an audience unprepared, one group was encouraged to formulate their inner dialogue with first-person sentences like ‘I’ and ‘me’, while the other group, instead of first-person sentences, was asked to use their own name and either as a third person with ‘she’ or ‘he’ or in the second person with ‘you’. The results showed that participants with first-person sentences had significantly more negative emotions, while the second group not only found the situation less embarrassing felt, but also made a better impression (Kross, Bruehlman-Senecal, Park, Burson, Dougherty, Shablack & Ayduk, 2014). So, using a second or third person in inner conversation can help to create more distance, reduce negative inner voices, and perform better.

To conclude, these studies show how gaining distance from oneself and the inner negative voices as well as how zooming out from situations can help create distance that gives a different wider perspective and opens the possibility to act wiser. With this, these interventions and the domain of neuroscience offers a valuable perspective to contribute to better dealing and reducing procrastination as well as overcoming the intention-action-gap.

3 Discussion

This paper has started to shed light on the reasons for procrastination and not overcoming the intention-action-gap and has started to systematically investigate the concepts and theories offered by various domains to help reduce procrastination and better overcome the intention-action-gap.

The proposed concepts and theories from the domains of positive psychology as well as chronobiology and energy competence help to increase motivation, self-control and with that to support the jumping power over the intention-action-gap. Further the concepts and theories from the domain of behavioral economics called nudging as well from the field of neuroscience help to reduce demotivating and hindering factors to make the gap smaller. These effects are illustrated in figure 3.

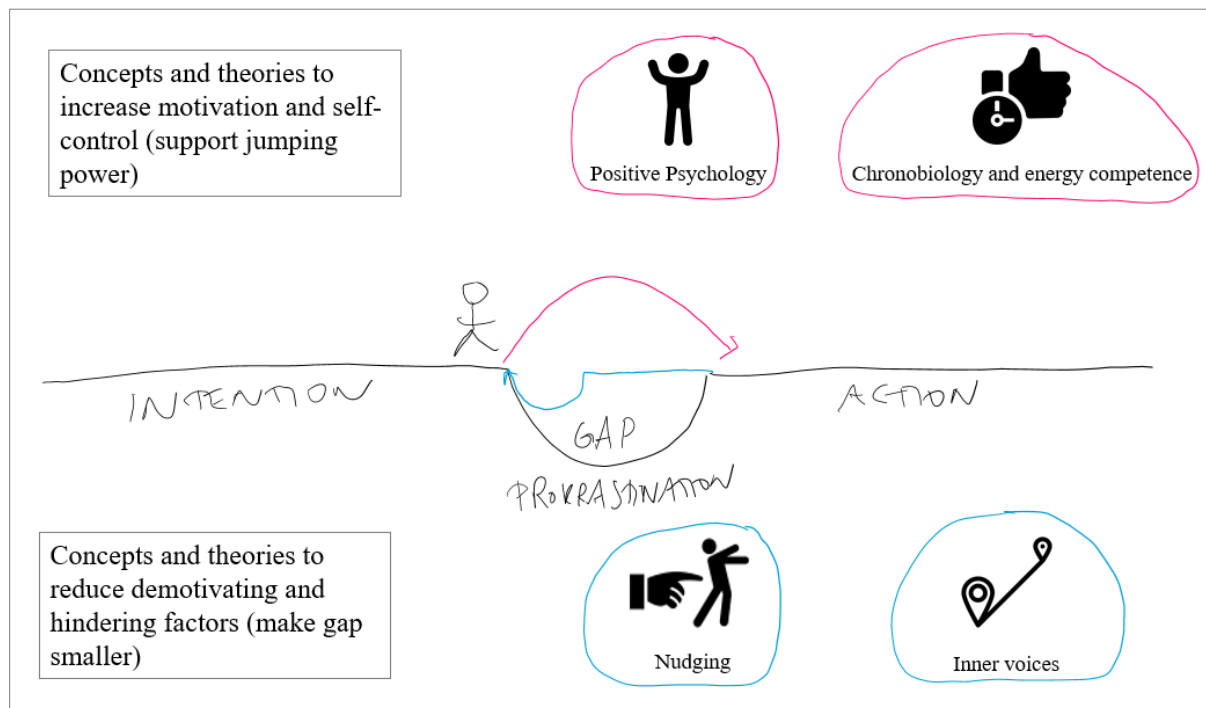


Figure 3: Overview of concepts and theories to overcome the intention-action-gap and reduce procrastination

This paper acts as a starting point and further effort needs to be put into better understanding the blocks, barriers and reasons for resistance that lead to procrastination as well as extend the search for potential concepts and theories that contribute to reducing procrastination and overcoming the intention-action-gap.

Further concepts and theories with the potential to increase motivation and self-control or reduce demotivating and hindering factors are:

- Emotional self-regulation to increase self-control (Gross, 2008; Rehnert & Kernbach, 2020a; Rehnert & Kernbach, 2020b).
- Knowledge visualization to decrease the demotivating and hindering factor of cognitive and information overload by structuring information and better dealing with complexity by visualization principles such as ‘overview first, details on demand’ (Kernbach, 2021; Faff & Kernbach, 2021; Eppler & Kernbach, 2016).
- Boundary setting to reduce the demotivating and hindering factor of distractions (Koch & Binnewies, 2015)
- Design thinking applied to life through the concept of life design (Kernbach & Eppler, 2022; Kernbach & Eppler, 2020)

4 Conclusion

This paper has aimed to shed light on concepts and theories to support reducing procrastination and overcoming the intention-action-gap. This is important to understand since people are drivers of change, innovation, and progress. Energetic employees take initiative that drive innovation and develop a pro-active approach towards life. However, procrastination can get in the way. If the demotivating and hindering factors are greater than motivation and self-control, then we procrastinate.

Procrastination leads to a gap between how we intend to act and how we act in reality which also called intention-action-gap where we have formulated an intention but do not follow through and take action. Only 30% to 40% of the variation in behavior can be predicted by intention but the question remains what can help alter the remaining 60-70% of behavioral change.

This paper has set out to better understand which concepts and theories could help explain those 60-70% of behavioral change and move towards a science of action by investigating systematically potential contributions from different domains.

As a starting point, this paper examines has examined nudging theory from the domain of behavioral economics, dealing with negative inner voices and how insights from the domain of neuroscience help to get distance and perspective, insights from positive psychology with character strengths and the science of well-being, and insights from chronobiology and chronotypes to better manage physical, mental, and emotional energy. These four theories show the potential from various domains to reduce procrastination and better overcome the intention-action-gap. In addition, this paper provides further concepts and theories such as emotional self-regulation for better self-control, knowledge visualization for better dealing with cognitive and

information overload, boundary setting for better ways to deal with distractions, and design thinking applied to life through the concept of life design.

I hope that this paper makes a contribution to the field of procrastination and the intention-action-gap by providing a discussion point of a science of action which will hopefully inform researchers and practitioners to better understand the underlying mechanisms of procrastination and fruitful strategies from different domains to overcome them to benefit the individual, organizations, and the society at large.

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