Procrastination

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Abstract

Procrastination is a pervasive and pathological delay, where we put off despite expecting to be worse off. It is associated with other forms of self-regulatory failure, rooted in our neurobiology, though can be exacerbated by environmental features. Though several effective treatments for it are available, procrastination is self-perpetuating as procrastinators will often focus on emotional coping strategies, putting off dealing with the source of their delays.

Part 1. Definition and Types of Procrastination

Terms and references that can be ascribed to procrastination occur throughout the historical record, dating back to ancient Egypt's middle of the 18th dynasty, under the reign of Thutmosis III (i.e., "Friend, stop putting off work and allow us to go home in good time"). It appears in most major religious texts, including Islam, Hinduism, Buddhism, and Christianity. It is also increasingly common, with approximately 25% of the modern population confessing that they typically procrastinate. Given its prevalence, it is unsurprising that the term has been used in various ways to describe different forms of delay. However, among all these descriptions, common themes do emerge.

Definitions of Procrastination

Procrastination is typically taken as an irrational or a self-defeating delay, to be worse off for putting off. After a historical review of definitional efforts, Steel (2007) integrates previously established key components to produce, "to voluntarily delay an intended course of action despite expecting to be worse off for the delay." Further building on this effort, Klingsieck (2013a) refines this definition to, "the voluntary delay of an intended and necessary and/or [personally] important activity, despite expecting potential negative 3 procrastinated, it should be: i) intended, ii) voluntarily delayed, iii) foreseeably pathological." However, there is tension among all these components as they all can be considered continuous dimensions. An 'intended' task may range from a flippant notion to a proclaimed goal. Circumstances may make goal pursuit easy, meaning any delay is clearly voluntarily, to extremely difficult verging on the impossible, making delay effectively involuntary. The problematic consequences of the delay can range from the obvious to the unapparent in both likelihood and magnitude. Though there are some delays that are clearly procrastination and some that are not, it can be debated when one becomes the other.

Differences between Procrastination and Strategic Delay

Procrastination requires delay but is not equivalent to delay. However, at times the notion of 'active' or 'positive' procrastination will arise, referring to a strategic self-serving delay (Chu and Choi, 2005). This is not compatible with the dominant use of the term or procrastination's strong association with self-regulatory failure. However, there are forms of positive or purposeful delay that superficially appear similar to procrastination. In particular, purposely leaving a manageable portion of a project until near the deadline, taking advantage of increased motivation that occurs then, can be beneficial. In contrast, involuntarily leaving excessive amounts of work until just before the deadline because one cannot find motivation earlier typically is not. In the former, the person can choose to work earlier but prefers not to. In the latter, the person may prefer to work earlier but cannot find the motivation. Helping to differentiate the two is the question "How useful would it be for you to have more motivation earlier, well before the deadline?." While everyone might find more motivation desirable, for the procrastinator this will be especially so.

Types of Procrastination

Typologies of procrastination can be organized by life domain (e.g., academic or health), by self-reported reason or justification (e.g., rebellion or arousal), and by cause (e.g., self-efficacy or value driven). Since procrastination appears to require some sort of impulsive weakness of the will, where we act against our own best interests, it is facilitated by proximity to temptations or environmental cues. Personality traits are predictive of what temptations procrastinators tend to be susceptible to, resulting in different phenomenologies of procrastination (Schouwenburg, 2004). People high in the personality trait of extraversion, for example, will ascribe their procrastination to their need to socialize while conversely those low in extraversion (i.e., introverts) will attribute their procrastination to their need for solitude. Most studied among these is the neurotic or perfectionist procrastinator, who is most likely to seek clinical treatment and has given rise to the belief that perfectionism causes procrastination in general. Though there is almost no association between perfectionism and procrastination, impulsive perfectionists should personally experience their perfectionism as being the cause of their procrastination and this particular typology may respond well to techniques for managing anxiety.

Demographic Differences

Though procrastination is found within all societies and all time periods, there are areas of prevalence (Steel and Ferrari, 2013). To begin with, it is associated with a modernized society as greater access to temptation increases the incident rates of procrastination. Sensibly, the easier and more enjoyable it is to put off tasks, the more people procrastinate. Cultural values also may influence the rate of procrastination among nations, with Ireland reporting the most procrastination among English-speaking countries. Procrastination, being self-defeating, is associated with lower levels of income and education and less relationship success. In short, procrastinators are more likely to be unemployed, less educated, and single. Finally, procrastination is seen more in men than women and in the younger rather than older. Notably, sex differences in procrastination partially explain women's rise both academically and in the workforce.

Part 2. Measurement of Procrastination

As per the definition of procrastination, there are certain inherent problems in identifying when procrastination occurs. It may not be entirely clear to the observer or even the individual. The degree of intentionality of the task is not always evident and possibly malleable in retrospect. Obstacles may intervene hindering speedy completion of the task that are as seen insurmountable by the individual but only inconvenient by an observer. Also, the consequences of the delay may not be evident, allowing the overly optimistic, who truly believes there is plenty of time left, to appear to be a procrastinator to a dispassionate observer. Finally, standards and desires differ so the exact same consequences for delay can be procrastination by one, who is worse off, but not for another (Silver and Sabini, 1981).

Self-Report

Procrastination, like personality measures, can be measured as an overall general trait or by specific life domain. Typically, improved measurement can be achieved by using as specific a measure as the context will allow. By 2006, there have been at least 10 procrastination measures used in research (Steel, 2007), with several more developed since.

General Measures

Among the most popular of the general measures of procrastination are the General Procrastination Scale (GPS), the Adult Inventory of Procrastination (AIP), Tuckman Procrastination Scale, and the Decisional Procrastination Scale (DPS). Notably, the first three of this list is often characterized as representing behavioral procrastination, the delay of a task, while the last of these represents decisional procrastination, the delay of choice. While there is support for goal choice and goal pursuit to represent distinct stages, the DPS does show strong associations with the other behavioral measures and even contains an item "Even after I make a decision I delay acting upon it." It is questionable whether the decision procrastination, as measured, is a separate construct.

More recently, there appears to be criterion contamination problems among many of these measures (Steel, 2010). They assess procrastination by not only asking if the person delay irrational (e.g., "Putting off until the last minute has cost me money in the past"), but also if the person is prompt (e.g., "I generally return phone calls promptly") or if the person simply delays (e.g., "I find myself running later than I would like to be"). While the last two components are related to procrastination, they are not procrastination itself. Failing to be prompt is not the same as procrastinating and simply being busy or overcommitted can cause delay.

In response, the Pure Procrastination Scale has been developed that focuses purely on irrational delays, comprised of items from the DPS, the GPS, and the AIP that load together and reflect the traditional definition of procrastination (Steel, 2010). It shows improved associations with key outcome variables, such as subjective well-being, and proves to be functionally equivalent to the Irrational Procrastination Scale, which is designed to assess procrastination as an irrational delay.

Specific Measures

With life domains ranging from the marital to the financial, there are numerous potential ways to focus procrastination. Though some other specific measures have been used, such as procrastination regarding household safety, only one area has proven dominant: academic. In particular, Solomon and Rothblum's (1984) seminal measure, the Procrastination Assessment Scale – Student is often employed in this context, though somewhat basic in construction. It asks students to rate 'school activities in general' as well as five specific tasks (e.g., writing a term paper, keeping up with weekly readings) in term of how much they procrastinate, whether their procrastination is a problem, and do they want to stop procrastinating. In addition, there is a separate 'reasons for procrastination scale,' which provides 26 possible explanations for student's procrastination.

Given that procrastination is equally or even more of concern in many other life domains, including financial, such as failing to put enough aside for retirement, and health, such as failing to seek treatment, more specific measures for other domains should be entertained.

Observed

Difficulties in observing procrastination have not prevented several attempts. To the extent that the outcome of delay is clearly foreseeable, adverse, and there is task commitment, observed measures of procrastination are likely valid, especially in the aggregate. Like self-report measures, academia has proven to be of particular interest.

Academic Measures

Difficulties in observing procrastination are assuaged somewhat in an academic setting. Goals can be assigned, such as quizzes or essays, ensuring that a majority of students have a degree of intention. Problems of procrastination are well known in this setting and early starts are repeatedly counseled. The effect of delay is foreseeable and adverse, at least in many cases. Consequently, academic self-reports of procrastination and observed delays in this context are substantively associated (Steel et al., 2001). Specific

assignments typically used include the following: class attendance, course grade, quiz grade, and meeting a deadline for an assignment. Other less common academic aspects assessed include getting a PhD, publication rate, getting tenure, and timing of experimental participation. In particular, a computerized personal system of instruction, often now used in massive open online courses, provides an almost ideal venue to study academic procrastination. The pace of assignment completion, which is among the best inconspicuous measures of observed procrastination, can be automatically assessed for an extremely large number of people. Using this as a measurement foundation, a comprehensive set of interventions and diagnostics can be explored.

Other Measures

Other attempts to assess procrastination behavioral are far more limited. Interesting examples include when Christmas shopping is done, a gift receipt or check is cashed, or a letter is mailed. To some extent, an open critique is that the delay may not be irrational but due to the participant simply being busy or uninterested. One exception to this is by Reuben et al. (2007), who gave MBA students the option of either cashing a smaller check now or a larger check later. Though most students choose the smaller but immediate check, they did not cash it until after they would have received the larger but later one.

Looking forward, more success may be achieved by creating observed or behavioral measure at the group, neighborhood, or nation level. It would be constructed by identifying common, foreseeable, and almost universally beneficial tasks required for most people. For example, this may include the degree they pay their bills on time, the number of canceled dentist appointments, the degree of preparation for retirement, or the ratio of gym memberships to gym attendance. While individual exceptions to these self-regulatory tasks may occur, especially if there are financial constraints, in aggregate it would reveal if a community was indeed prone to procrastination.

Self-Deception

Because procrastination has ambiguous aspects, it leaves the possibility for self-deception. We can retrospectively recast our behavior as unintentional (e.g., "I wasn't really planning to do that anyway"), as unforeseeable (e.g., "I thought I had enough time!"), or as beneficial (e.g., "It is probably best I didn't get that done"). This can be considered an emotional coping strategy, where people look for explanations that are pleasing or self-serving (Sirois and Pychyl, 2013). This strategy is common in impulse-related disorders, where people sacrifice larger but later benefits for short-term rewards. Consequently, procrastinators may tend to congregate and compare themselves to other procrastinators to facilitate downward counterfactuals, where we contrast our situation with those even worse off. Denial, aside from making procrastination difficult to assess, also perpetuates the condition. Taking a task-oriented strategy, rather than an emotional coping strategy, tends to reduce the degree of procrastination. At times, procrastinators must accept and forgive themselves for their procrastination before they can move from an emotional to a task-oriented coping style (Wohl et al., 2010).

Part 3. Research Perspectives

Concerning the field of psychology, theoretical approaches to procrastination can be grouped into several perspectives (Klingsieck, 2013a). These perspectives are differential psychology, the perspective of motivational and volitional psychology, the perspective of clinical psychology, the situational perspective, and the perspective of neurobiology.

Perspective of Differential Psychology

Differential psychology understands procrastination as a personality trait. Studies in this perspective have built up an extensive nomological network of procrastination and have focused on studying the relationship of procrastination with other trait and traitlike variables (Klingsieck, 2013a).

The Big Five

The big five is a common personality taxonomy used to study procrastination (Steel, 2007; van Eerde, 2003). Increased procrastination is mainly associated with decreased conscientiousness while the factors of extraversion, openness to experience, and agreeableness are not significantly related to procrastination. Neuroticism has an intermittent relationship with procrastination, depending on the measure, which disappears once conscientiousness is controlled for. In addition, some studies have examined the relationship between intelligence and procrastination, but have found no correlation (cf Steel, 2007).

Perfectionism

Early works in the field viewed procrastination as primarily caused by irrational beliefs, such as perfectionism (Burka and Yuen, 2008). Correlational results do not support this notion, indicating a relatively minor contribution compared to other constructs, especially self-efficacy and impulsiveness. However, the role of perfectionism continues to be debated. One reason for the mixed results might be the different approaches to operationalize perfectionism. Within some articles it is understood as a one-dimensional construct, while other authors understand perfectionism as a multidimensional construct (e.g., procrastination associated with socially prescribed perfectionism vs procrastination associated with self-oriented perfectionism). Alternatively, perfectionism's perceived relationship may be due to an increased likelihood of neurotic procrastinators seeking treatment – a self-selection effect – combined with any other major personality trait, high or low, will be experienced by an individual as being instrumental in causing their procrastination (Schouwenburg, 2004). However, this does not preclude that treating pathological perfectionism beliefs could help the *neurotic* procrastinator.

Self, Self-Esteem, and Self-Handicapping

Procrastination is also related to low self-esteem and certain identity aspects such as a diffuse ego identity and greater discrepancies between actual, ought, and desired self. Whether this is a cause or consequence of procrastination is debatable. To the extent that low self-esteem is related to low self-efficacy, it can be viewed as a cause. To the extent that low esteem is due to the compromised performance resulting from procrastination, it is an effect. On balance, the mostly widely

adopted position in the procrastination field is the former of these, that it is a cause, especially with regards to self-handicapping. Delaying tasks until it becomes difficult to determine a person's true capability can be a self-esteem protecting strategy. On the other hand, it can be argued that self-handicapping is a more calculated act and does not reflect the impulse-driven behavior typically associated with procrastination. In either case, they both represent self-defeating delays, but may respond to different treatments. Self-handicappers would best be treated by challenging underlying irrational beliefs. Procrastinators would best be treated by reducing the preference reversal effects of impulsiveness.

Time, Time Orientation, and Time Preferences

Concerning time-related personality styles, procrastination is associated with circadian rhythms known as the 'eveningness' type (Digdon and Howell, 2008). With regard to time orientations, procrastinators seem to display a reduced focus on the future, a fatalistic focus on the present (only avoidance procrastination) or a hedonistic focus on the present (only arousal procrastination), and negative attitudes about the past (Jackson et al., 2003).

Perspective of Motivational and Volitional Psychology

The motivational and volitional psychology perspective understands procrastination as a failure in motivation and/or volition (Klingsieck, 2013a), leading to the intention–action gap (Steel, 2007).

Motivational Aspects

Concerning motivational aspects, procrastination is less likely to occur in the case of intrinsically, self-determined, or flow-inducing activities. Furthermore, low procrastination is related to a mastery goal orientation and internal locus of control. Self-efficacy is often studied with regard to academic procrastination. However, studies display mixed results concerning the role of self-efficacy. Some studies understand and investigate test and self-efficacy as individual contributors to procrastination, while others focus on the mediating role of self-efficacy between perfectionism and procrastination. However, meta-analytically it has on average a strong connection (Steel, 2007).

Behavioral Economics and Temporal Motivation Theory

The phenomenon of procrastination violates the mainstream economic assumption of rationality, being a purposeful and self-defeating delay. Consequently, the field of behavioral economics, which relaxes the rationality assumption, has shown more interest in the phenomenon. Typically, economists adopt a version of the behavioral psychology's matching law, which has similarities to classical economics' subjective expected utility equation, except that rewards are hyperbolically discounted. The concept of hyperbolic discounting or time discounting allows for an interdisciplinary bridge between psychology and economics in the explanation of procrastination. Within this realm, procrastination is related to picoeconomics and the rational choice framework, as well as the concept of present-biased preferences.

The Temporal Motivation Theory (Steel and König, 2006) explains procrastination from a time-discounting perspective. It is an integrative theory that incorporates the best-validated aspects of the core motivational theories. Results were that the constructs of expectancy (e.g., self-efficacy), value (e.g., task aversiveness), and time sensitivity (e.g., impulsiveness) are the major predictors of procrastination. These constructs are organized into an equation consistent with other major theories, particularly Expected Utility Theory, Hyperbolic Discounting, and the Matching Law. Mathematically expressed, $\text{motivation} = (\text{expectancy} \times \text{value})/(1 + \text{impulsiveness} \times \text{delay})$. Motivation increases as the expectancy of an outcome and the size or value of an outcome increase. Motivation decreases as the delay before this outcome and the impulsiveness increases. As per Figure 1, procrastination occurs due to preference reversal, where a proximally or immediately available temptation pulls or distracts away from a former intention. According to this theory, procrastination is more likely to occur if the outcome of an unpleasant activity offers rewards in the distant future.

Volitional Aspects

Concerning volitional aspects, procrastination is associated with decreased self-regulation, decreased self-control, decreased action control, or volitional problems in general. More specifically, procrastinators seem to lack time management strategies, seem to be easily distracted by attractive action opportunities, and display a less frequent use of learning strategies.

Perspective of Clinical Psychology

The clinical psychology perspective focuses on the conditions of and interventions for the clinically relevant extent of procrastination (Klingsieck, 2013a). In explaining procrastination, these theoretical approaches often draw on psychoanalysis, cognitive behaviorism, and neuropsychology (for a summary, see Steel, 2012). Of all the perspectives, it is the clinical one that puts the negative consequences and correlates of procrastination intensely into focus because these determine whether procrastination is clinically relevant or not.

Affective and Cognitive Aspects: Fear of Failure, Test Anxiety, and Depression

Self-help books often state that the most prominent causes of procrastination are irrational beliefs, such as fear of failure or

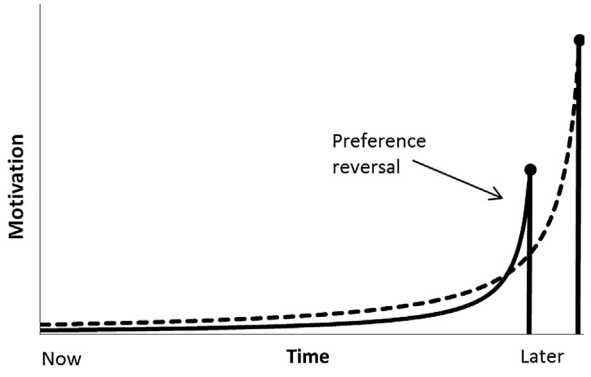

Figure 1 Preference reversal due to temporal discounting.

test anxiety. Thus, procrastination is often investigated within a framework of coping styles and anxiety (e.g., Burka and Yuen, 2008).

Depression is considered both a cause (through the mechanism of diminished energy) and a consequence (through the mechanism of reduced performance) of severe procrastination. However, procrastination is related to depression only for clients diagnosed with depression, being that procrastination is a symptom of the condition.

Behavioral Aspects: ADHD

In realm of procrastination's link to impulsiveness, the relationship between procrastination and attention deficit hyperactivity disorder (ADHD) is discussed but rarely studied. The Axis 1 disorder ADHD is identified by procrastination among other symptoms, such as inattentiveness, difficulty in getting work done, and organizational problems. However, like depression, procrastination is related to ADHD only for persons diagnosed with ADHD, it being a symptom of the condition. For individuals who are not diagnosed with ADHD, procrastination is not associated with attention deficits. However, procrastinators are more likely to be prone to boredom than nonprocrastinators and, like those with ADHD, seek more stimulating situations (Ferrari, 2010).

Situational Perspective

Although intuitively obvious, especially given the volitional problems of procrastinators, few studies have been conducted that focus on environment characteristics that promote procrastination. Thus, the situational perspective encompasses only a small subset of theoretical ideas and empirical studies on procrastination. The situational perspective understands procrastination as a phenomenon that is evoked by certain environmental characteristics (Klingsieck, 2013a). The features associated with procrastination are task difficulty and attractiveness, plausibility of the assignment, autonomy, teachers' or supervisors' characteristics, and the proximity and saliency of temptations and distractions.

Perspective of Neurobiology

Research endeavors in the field of neurobiology have been scarce, although the dualistic theory of mind provides a promising model to explain procrastination (cf Steel, 2012). Referred to by various terms, such as hot/cool, passion/reason, or system 1/system 2, it indicates that the prefrontal cortex often makes or maintains intentions. However, when the mechanisms of the prefrontal cortex are exhausted or compromised, decision making relocates to the limbic system. The limbic system is much more susceptible to short-term temptations and distractions. Consequently, we make intentions to act but find it difficult to follow through despite wishing we would. Drawing on historical records, functional magnetic resonance image research, genetic studies, comparative psychology, developmental psychology, and evolutionary psychology, Steel (2012) finds considerable support for this model. There is also empirical evidence that procrastination can be largely explained by problems with the prefrontal cortex role as the executive function (Rabin et al., 2011).

Part 4. Impact in Different Life Domains

Procrastination research has investigated procrastination in a variety of different life domains, however, studies that compare procrastination's characteristics across different domains are yet to be conducted (Klingsieck, 2013a; for a first endeavor see Klingsieck, 2013b). The life domains studied are education (i.e., academic procrastination), work and financial, health, and subjective well-being. Each of them is briefly discussed below.

The procrastination of study-related activities in a student population is often studied under the term academic procrastination. While procrastination also focuses on procrastination in other life domains, this domain is the most studied within procrastination research. The research mainly focuses on reasons and consequences of procrastination showing that procrastination can have a detrimental impact on achievement and on subjective well-being of students.

Research on procrastination with regard to job-related aspects has concentrated on procrastination of job search behaviors and workplace performance. Procrastination has been shown to be negatively related to implementation intention formation, but to positively predict intention–behavior discrepancies and the extent to which job seekers engage in other activities instead of performing planned job search activities. Moreover, it is also negatively related to the process quality of job seeking. Research concerning procrastination in the workplace is surprisingly scarce. This is striking given that Steel (2012) reviews estimates that put procrastination at over 25% of most people's work time, potentially reducing productivity by $1.25 trillion in the United States alone. Studies have included identifying what job characteristics exacerbate procrastination (i.e., the situational perspective) as well as the consequences of procrastination. For instance, procrastination is frowned upon in the workplace. Interestingly, although procrastination is often understood as a deficit in self-management, it does not seem to be related to deficits in managing others. Concerning the procrastination of important financial aspects, studies have shown that the majority of people by their own standards feel that they have procrastinated savings for their retirement too long. The same holds true for procrastinating on taxes.

The health domain is one of the more procrastination relevant area, speaking to the speed of seeking treatment or 'patient compliance' in treatment programs. Constructs studied in the health domain are often the same as for academic procrastination (e.g., self-efficacy, self-control), indicating that this is largely the same phenomenon and the results are transferable. Within the health area, procrastination presents itself as a self-regulation deficit leading to the intention–action gap with regard to dieting, physical training, and preventive medical checkups. For example, colon cancer is among the deadliest despite being the most treatable, simply because people delay getting colonoscopies.

Procrastination has been shown to have various negative effects on subjective well-being. For example, it has been shown to result in augmented stress and regret. Procrastinators often report having feelings of personal failure due to their procrastination and frustration regarding their inability to start earlier. Furthermore, studies have shown that procrastination can also pertain to enjoyable activities, where people put off pleasurable pursuits. Although procrastination might function

as a short-term mood repair, in the long run it has negative consequences on subjective well-being.

Part 5. Treatments

The negative consequences of procrastination have led to the development of various intervention programs and to the publication of numerous self-help books to overcome procrastination. One of the oldest treatment ideas is the idea of behavior control. Most interventions have focused on either teaching self-management strategies (e.g., goal setting, time management, planning, monitoring, creating the right environment for studying) or implementing therapeutic strategies to tackle negative affect and cognitions (e.g., cognitive restructuring).

The number of these self-help books concerning procrastination has grown steadily in recent years. The works written by counseling psychologists emphasize irrational beliefs, such as perfectionism and low self-esteem, by procrastinators (e.g., Burka and Yuen, 2008). The works written by research psychologists (e.g., Ferrari, 2010; Steel, 2012) indicate that procrastination is primarily a self-regulation failure and an impulse-related issue. Consequently, they focus on improving self-regulation skills and situational or stimulus control.

Therapeutic strategies in overcoming procrastination pertain to techniques of cognitive restructuring (to tackle negative cognitions), relaxation exercise (to tackle negative affect), time restriction, and, paradoxical interventions. For example, a special issue of the *Journal of Rational-Emotive & Cognitive-Behavior Therapy* (REBT; Dryden, 2012) came out in which different approaches concerning REBT are delineated. Anxiety-based treatments are likely to be most effective for the perfectionist or neurotic procrastinator. On the other hand, the outpatient clinic at the University of Münster (Germany) has built a special outpatient clinic for procrastinators focusing on cognitive-behavioral therapy that may be more broadly applicable. The methods they employ include realistic goal setting, stimulus control, and self-motivation.

Most trainings aiming at overcoming procrastination foster strategies concerning self-management such as goal setting, time management, planning, monitoring, and creating the right environment for studying. For a summary of these interventions, see Schouwenburg et al. (2004).

See also: Anxiety and Anxiety Disorders; Behavior Therapy: Background, Basic Principles, and Early History; Decision Making, Psychology of; Decision Making: Nonrational Theories; Depression; Emotional Regulation; Executive Functions During Childhood, Development of; Expectancy-Value-Cost Model of Motivation; Future Time Perspective and Motivation; Grit; Health Self-Regulation, Motivational and Volitional Aspects of; Motivation and Actions, Psychology of; Motivation in Clinical Interventions; Personality and Economics; Personality and Values at Work; Self-Efficacy; Self-Regulated Learning; Subjective Wellbeing, Psychology of; Wisdom, Psychology of; Work Motivation.

Bibliography

Burka, J.B., Yuen, L.M., 2008. Procrastination: Why You Do It, What to Do about It. Da Capo, Reading, MA.

Chu, A.H.C., Choi, J.N., 2005. Rethinking procrastination: positive effects of "active" procrastination behavior on attitudes and performance. The Journal of Social Psychology 145, 245–264.

Digdon, N.L., Howell, A.J., 2008. College students who have an eveningness preference report lower self-control and greater procrastination. Chronobiology International 25, 1029–1046.

Dryden, W., 2012. Dealing with procrastination: the REBT approach and a demonstration session. Journal of Rational-Emotive & Cognitive-Behavior Therapy 30 (4), 264–281.

van Eerde, W., 2003. A meta-analytically derived nomological network of procrastination. Personality and Individual Differences 35, 1401–1419.

Ferrari, J.R., Johnson, J.L., McCown, W.G., 1995. Procrastination and Task Avoidance: Theory, Research, and Treatment. Plenum, New York.

Ferrari, J.R., 2010. Still Procrastinating: The No-Regrets Guide to Getting It Done. Wiley, Hoboken, NJ.

Jackson, T., Fritch, A., Nagasaka, T., Pope, L., 2003. Procrastination and perceptions of past, present, and future. Individual Differences Research 1, 17–28.

Klingsieck, K.B., 2013a. Procrastination: when good things don't come to those who wait. European Psychologist 18, 24–34.

Klingsieck, K.B., 2013b. Procrastination in different life-domains: Is procrastination domain specific? Current Psychology 32, 175–185.

Rabin, L.A., Fogel, J., Nutter-Upham, K.E., 2011. Academic procrastination in college students: the role of self-reported executive function. Journal of Clinical and Experimental Neuropsychology 33 (3), 344–357.

Reuben, E., Sapienza, P., Zingales, L., 2007. Procrastination and Impatience (No. W13713). National Bureau of Economic Research, Cambridge.

Rothblum, E.D., Solomon, L.J., Murakami, J., 1986. Affective, cognitive and behavioral differences between high and low procrastinators. Journal of Counseling Psychology 33, 387–394.

Schouwenburg, H.C., 2004. Procrastination in academic settings: general introduction. In: Schouwenburg, H.C., Lay, C.H., Pychyl, T.A., Ferrari, J.R. (Eds.), Counseling the Procrastinator in Academic Settings. American Psychological Association, Washington, DC, pp. 3–17.

Schouwenburg, H.C., Lay, C.H., Pychyl, T.A., Ferrari, J.R. (Eds.), 2004. Counseling the Procrastinator in Academic Settings. American Psychological Association, Washington, DC.

Silver, M., Sabini, J., 1981. Procrastinating. Journal for the Theory of Social Behavior 11 (2), 207–221.

Sirois, F., Pychyl, T., 2013. Procrastination and the priority of short-term mood regulation: consequences for future self. Social and Personality Psychology Compass 7 (2), 115–127.

Solomon, L.J., Rothblum, E.D., 1984. Academic procrastination: frequency and cognitive-behavioral correlates. Journal of Counseling Psychology 31 (4), 503–509.

Steel, P., 2007. The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure. Psychological Bulletin 133, 65–94.

Steel, P., 2010. Arousal, avoidant and decisional procrastinators: do they exist? Personality and Individual Differences 48, 926–934.

Steel, P., 2012. The Procrastination Equation: How to Stop Putting Things Off and Start Getting Things Done. Pearson Education, Harlow, UK.

Steel, P., Ferrari, J., 2013. Sex, education and procrastination: an epidemiological study of procrastinators' characteristics from a global sample. European Journal of Personality 27 (1), 51–58.

Steel, P., König, C.J., 2006. Integrating theories of motivation. Academy of Management Review 3, 889–913.

Steel, P., Brothen, T., Wambach, C., 2001. Procrastination and personality, performance, and mood. Personality and Individual Differences 30, 95–106.

Wohl, M., Pychyl, T., Bennett, S., 2010. I forgive myself, now I can study: how self-forgiveness for procrastinating can reduce future procrastination. Personality and Individual Differences 48 (7), 803–808.