



Linnéuniversitetet

MASTERS THESIS
EXAMENSARBETE

Procrastination, grit and self-efficacy

for self-regulation:

A correlational study in a student sample

Prokrastinering, grit och ”self-efficacy

for self-regulation”:

En korrelationsstudie bland studenter

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Abstract

Background: Procrastination or the tendency to delay various actions despite knowing that this delay will likely bring negative consequences, is a widespread phenomenon. It has been found to be especially common among college students and has been linked to various negative outcomes.

Aim: The current study aimed to explore the relationship between procrastination and self-efficacy for self-regulation (belief in ones ability to successfully self-regulate) and grit (to pursue important goals over long periods of time with passion and determination, despite setbacks or distractions) in a sample of 208 Swedish university students.

Method: Self-report measures relating to the relevant constructs were administered to the students and analysed using correlational and partial correlational tests.

Results: Results indicated that procrastination were strongly negatively correlated with both grit and self-efficacy for self-regulation. Self-efficacy for self-regulation were also found to be a partial mediator of the relationship between grit and procrastination.

Conclusion: More research is needed on the relationship between self-efficacy for self-regulation and procrastination. Additionally, a more conceptually valid scale to measure grit should be developed.

Keywords: Procrastination, grit, self-efficacy for self-regulation

Abstrakt

Bakgrund: Prokrastinering eller, tendenser till att skjuta upp olika saker trots vetskapen om att förseningen troligen kommer medföra negativa konsekvenser, är ett utbrett fenomen. Prokrastinering har befunnits vara särskilt vanligt bland universitetsstudenter och har sammankopplats med en flera negativa konsekvenser.

Syfte: Syftet med den aktuella studien var att undersöka relationen mellan prokrastinering, ”self-efficacy for self-regulation” (tilltron till sin egen förmåga att framgångsrikt utöva självreglering) och grit (förmågan att, med beslutsamhet och passion, jobba mot ett viktigt mål över långa tidsperioder, trots motgångar och distraktioner).

Metod: Självskattningsskalor relaterade till de relevanta konstrukterna delades ut till studenterna som deltog i studien och test för korrelation och partiell korrelation användes för att analysera resultaten.

Resultat: Resultaten indikerade att prokrastinering var starkt negativt korrelerad med både grit och ”self-efficacy for self-regulation”. ”Self-efficacy for self-regulation” visade sig också vara en partiell mediator mellan grit och prokrastinering.

Slutsats: Mer forskning behövs kring relationen mellan ”self-efficacy for self-regulation” och prokrastinering. Ett mer konceptuellt valitt mätinstrument för grit behöver dessutom utvecklas.

Nyckelord: Prokrastinering, grit, self-efficacy for self-regulation

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Introduction

Have you ever put off doing something, despite knowing that you really ought to do it now and that things probably will be worse for you later because of the delay? If the answer is yes, then you're "guilty" of procrastinating, like most of us, if the answer is no, you might not be entirely truthful, especially not if you happen to be (or have ever been) a college student. It is not hard to see why delay on study related activities can become problematic for college students, for example, turning in an important assignment late may lead to getting an automatic failure on the assignment and in turn lead to an extended study period where the unfortunate student have to take the course again, next semester or maybe even the following year. Steel (2007) warned against the dangers of underestimating procrastination and urged researchers not to procrastinate when it comes to procrastination research. The current study therefore aimed to investigate this widespread phenomenon of procrastination in a sample of Swedish college students and explore two potentially important correlates, namely grit and self-efficacy for self-regulation.

Procrastination:

Procrastination, or "the action of delaying or postponing something" (according to the oxford dictionary), has a long history. Steel (2007) traces the roots of procrastination more than 2800 years back in time to some of the earliest written records from ancient Greece, it seems that procrastination has long been viewed as a widespread and urgent problem. In fact, Steel (2007 p.84) notes that "procrastination has plagued human beings since at least the birth of civilization". Senécal, Koestner & Vallerand, (1995) suggests that procrastination can be viewed as an almost universal human deficiency. Indeed, they suggest that if someone were to claim that they had never procrastinated, they would probably be lying!

There is plenty of research to support this claim, for example Klassen, Krawchuk & Rajani, (2008) found procrastination to be extremely common among undergraduates, they report that 89% of students in their sample conveyed that they procrastinated (on study related tasks) more than 1 hour per day, with a mean roughly halfway between 1-2 hours and 3-4 hours! They also characterized 25% of their sample as negative procrastinators since these students indicated that they perceived procrastination as influencing their academic functioning negatively to a significant degree. In addition, Schraw, Wadkins & Olafson (2007) reported that over 70% of students procrastinate regularly, and Solomon & Rothblum (1984) reported that about 50% of undergraduates always or nearly always procrastinated on writing a term paper.

Although procrastination is sometimes commonly perceived as being mostly endemic to college students (Pychyl & Flett 2012) research has found that the problem has a much wider reach than that. For example, Klingsieck (2013) reports that procrastination seem to be at least moderately domain specific and found evidence of the occurrence of procrastination in 6 different life domains. Among those domains Klingsieck (2013) found procrastination to be especially prevalent in the domains of: School and work, health related behaviour (such as searching medical attention for injuries or symptoms of illness) and everyday routines and obligations (such as paying the bills). Steel (2010) also describe procrastination as an important contributor to several societal problems like global warming and saving for retirement. Niermann & Scheres, (2014) also suggests that procrastination can be classified according to what life domain it's symptoms manifests in. Academic procrastination refers to procrastination related to study tasks. Everyday procrastination can be considered as procrastination on daily routine activities, such as paying bills on time. Finally, decisional procrastination pertains to problems with making timely decisions (Niermann & Scheres, 2014).

When it comes to the consequences of procrastination, the behaviour has been associated with various negative outcomes such as increased levels of stress and psychological strain, more symptoms of physical illness, lower grades, missed deadlines, lengthened study periods (among college students), more daily (more hours procrastinated each day) and task (measured as available time/time started on an academic assignment) and more interpersonal conflicts related to ones procrastinatory behaviour. (Steel 2007, Tice & Baumeister 1997, Grunschel & Schopenhauer, 2015 and Klassen et al. 2008).

It is not entirely easy to pinpoint what exactly procrastination is, as illustrated by Steel, (2007) who notes that there is a plethora of different definitions of procrastination, almost one for every researcher that has explored the topic. To rectify this problem Steel (2007) suggests a definition of procrastination that focuses on the themes most consistently found in previous research. This results in the definition of procrastination as “a voluntary delay of an intended course of action despite expecting to be worse off for the delay” (Steel, 2007 p.66).

Although some researchers (Schraw et al. 2007 and Chun & Choi ,2005) has reported adaptive forms of procrastination termed as positive and active procrastination respectively, Corkin, Yu & Lindt (2011) has suggested that these phenomena may be better labelled as active delay, since they seem to be nether irrational nor dysfunctional. Indeed, Steels' (2007) definition of

procrastination highlights the irrational and dysfunctional nature of delay in procrastination, and thus separates procrastination from similar phenomena such as behaviour avoidance, which can be considered rational since the goal is to delay (Steel, 2007), or the aforementioned construct of active delay. Procrastination can thus, by its very nature, be inherently maladaptive and never beneficial (Steel, 2007) thus making constructs such as “positive procrastination” and oxymoron. Steel (2007) also describes procrastination as a phenomenon that is reasonably stable over both time and different situations. Procrastination can thus be considered a personality trait. Steel (2007) also differs between procrastination and the closely related personality trait conscientiousness by asserting that conscientiousness has a much broader scope and suggests that procrastination rather could be considered as a facet of conscientiousness.

Procrastination and other theoretically relevant constructs:

Procrastination has been found to correlate with a wide range of other theoretical constructs from various different theoretical disciplines (Steel, 2007). Steel (2007) notes that impulsivity and the inability to resist temptations have been found to be particularly important hallmarks of procrastination. Steel (2007) also highlights the importance of the intention-action gap for procrastination and goes on to describe this gap between intentions and implementation of said intentions as a crucial feature of procrastination. Thus, procrastination can be considered as unintentional as well as irrational because, despite intentions to do a certain task the procrastinator fails to follow through when the time for action comes. Steel (2007) also states that not acting upon ones, intentions can be considered “quintessential self-regulatory failure” (Steel, 2007 p.70).

In the literature plenty of research exists that emphasizes the important role that self-regulation and impulsivity plays for procrastination. To start, Klassen et al. (2008) defines self-regulation as the individuals, ability to control and adapt behaviour and actions under various conditions. Klassen et al. (2008) further notes that procrastinators are particularly vulnerable to failures in self-regulation in highly stressful situations. Dewitte & Shouwenburg, (2002) reports that procrastinators tend to experience strong temptations in the present and thereby fall victims to these temptations to a high degree, which is consistent with the conceptualization of procrastination as a self-regulatory failure. Rabin, Fogel & Nutter-Upham, (2011) also highlights the importance of the abilities of planning, initiation and organization for procrastination. Procrastinators tend to be lacking in these key executive functions related to self-regulation. Klassen, et al. (2008) adds that negative procrastinators show both tactical and

strategical deficiencies compared to neutral procrastinators. Negative procrastinators have issues with efficiently employing their resources to complete short term goals and thus they can be said to commit tactical errors, as manifested by their tendency to spend more time each day procrastinating on alternative tasks. They also procrastinate more than neutral procrastinators on long term projects and thus can be said to commit strategical errors, which are related to making long term action plans in an effort to accomplish long term goals (Klassen et al., 2008).

In the context of university studies, Schouwenburg & Groenewoud (2001) emphasize how the life of a university student is full of conflicts between rival goals. These goals differ in the perceived magnitude of the value of the reward and also in the time span until the reward is accessible. Students thus regularly face the challenge of resisting immediately available but relatively weak rewards (going to a party, watching tv) to the benefit of a distant but more valuable goal, such as getting a college degree and getting a good job etc, (Schouwenburg & Groenewoud 2001). It is thus easy to see why self-regulation in both the short (for example, avoiding procrastinating) and in the long term (maintaining interest and effort on the overarching goal of graduating despite setbacks, i.e grit) is important for a college student. Kachgal, Hansen & Nutter (2001) also suggests that one reason (of many) that procrastination is so common among undergraduates may be because many of these students are leaving home for the first time and one of the changes this may bring is that they may have to self-regulate their learning all on their own. In high-school and primary school many students may have been other-regulated by their parents, and the transition from having your parents functioning as your executive system and taking over those responsibilities yourself may not be easy.

In addition to research findings focused on self-regulation and impulsivity, Senécal et al. (1995) also indicate that procrastinators tend to exhibit problems with successfully recognizing and making use of external and internal signals as cues for when and where to engage (or maintain or disengage) in goal-directed behaviour. Steel (2007) also differentiates between trait procrastination, that can be defined as the individuals propensity to procrastinate over a wide range of situations while task procrastination can be defined as concerning specific tasks. Steel notes that the reason why some people procrastinate more than others may be that those people find a wider array of tasks and chores aversive. Steel (2007) further notes the importance of task characteristics in procrastination, mainly in the form of task aversiveness (how aversive a certain task is perceived) and the timing of rewards and punishments (events that are far in the future tend to influence peoples decisions in the present to a lesser degree).

Finally, Steel (2007) highlights the importance of procrastination as a potential way to understand how higher order personality (or dispositional) traits such as conscientiousness, with which procrastination can be intimately linked (Steel & Klingsieck 2016), can influence such phenomena as performance and motivation. Steel further notes that in his study procrastination largely mediates the relationship between conscientiousness and performance.

Grit:

One potential candidate for such a higher-order dispositional trait, is grit. Grit can be viewed as a stable dispositional trait-like characteristic that can influence an individual's actions and attitudes in a wide range of settings (Duckworth & Quinn, 2009) and has been defined as: "Trait-level perseverance and passion for long-term goals" (Duckworth & Quinn, 2009 p.166). Gritty individuals tend to view achievement as a marathon rather than as a sprint (Maddi, Matthews, Kelly, Villarreal & White, 2012). Grit has been conceptualized as consisting of two related dimensions related to extreme stamina towards long term goals (Duckworth & Quinn, 2009). The first dimension, consistency of interest pertains to an individual's tendency to maintain the same goal over a long period of time (Duckworth & Quinn 2009, Wolters & Hussain 2014). While the second dimension, perseverance of effort, taps into one's abilities keep working and maintaining energy and effort towards a long-term goal, despite distractions and setbacks. (Duckworth & Quinn 2009, Wolters & Hussain 2014).

Eskreis-Winkler, Shulman, Beal & Duckworth (2014) argues that grit is concerned with extreme stamina in the pursuit of an overarching goal. Grit not only implies working hard and determined towards a goal, it refers to putting in large amounts of time and effort over a long period of time in the pursuit of a singular important long-term goal. A gritty individual does not stray from the course even in the face of setbacks or temptations. Although grit and conscientiousness have been found to be highly positively correlated at, $r .77$ (Duckworth & Quinn, 2009). The focus of grit on extreme stamina over years or even decades is what sets it apart from conscientiousness, according to Duckworth & Quinn (2009). Eskreis-Winkler et al. (2014) suggests that grit can be seen as a narrow facet of conscientiousness, but that conscientiousness is a much broader construct. A gritty individual will keep on striving towards a superordinate goal even if the way there is temporarily blocked. If the path to a more proximal goal on the road to the superordinate goal is blocked, the gritty individual will find an alternative

way, while the less gritty individual may be discouraged by the setback and conclude that the superordinate goal may need to be revised or altogether abandoned (Duckworth & Gross 2014).

Grit has been related to several positive outcomes such as higher retention among military cadets, higher graduation rates among high-school students, higher job retention among salespeople, later final round achieved in a national spelling bee competition, a higher grade point average (GPA) among black male students at a predominantly white college and fewer career changes among a sample of adults (Duckworth & Quinn, 2009, Strayhorn, 2013, Eskreis-Winkler et al. 2014, Maddi, Matthews, Kelly, Villarreal & White, 2012) Grit has also been found to be a protective factor against stress (Lee, 2017). However, it should also be noted that there has also been several studies that have found contradicting results, for example, Maddi, Matthews, Kelly, Villarreal, Gundersen & Savino (2017) reports that grit seems to be unrelated to overall and academic performance in a sample of military cadets. They did not recommend grit as a construct that should be assessed as part of intake into the military academy. Rimfeld, Kovas, Dale & Plomin (2016) also found that Grit predicted only 0.5% of the unique variance in relation to General Certificate of Secondary Education (GCSE) results when controlling for the big-five personality traits in a large twin study. Additionally, questions have also been raised about whether consistency of interest and perseverance of effort would be better considered as separate constructs (Muenks, Wigfield, Yang & O'Neal, 2017, Wolters & Hussain, 2014). So, in essence previous research has found mixed results regarding the correlates of grit.

The correlation between grit and procrastination:

When it comes to the direct relationship between grit and procrastination Wolters & Hussain (2014) report negative correlations of a moderate strength between procrastination and the two dimensions of grit: Consistency of interest ($r = -.36$) and perseverance of effort ($r = .49$) respectively.

Self-Efficacy for Self-Regulation:

Procrastination has in addition to being associated with other dispositional traits related to its supposed core of self-regulatory failure, impulsivity and conscientiousness, such as grit (that has close ties to conscientiousness as reported by Wolters & Hussain (2014)). Several studies such as (Steel, 2007 and Klassen et al. 2008) have also found various forms of self-efficacy to be strongly correlated with grit. Self-efficacy can generally be described as a person's, forward oriented beliefs in his or her abilities to successfully perform in a certain area (Klassen et

al.2008). Klassen, et al, (2008) also highlights the importance of the level of specificity at which self-efficacy is assessed. Self-efficacy can be measured at a very specific level (i.e. how confident are you that you can successfully solve a specific question on an exam) to very general (how confident are you in your ability to succeed in attaining a PhD). Klassen, et al. (2008) further elaborates that the level of specificity of the measure need to be matched with the criterial task as well as the specific domain. For example a general measure of academic self-efficacy may not be appropriate if your criterion variable is the grades attained in a certain class or a specific assignment. Klassen et al. (2008) also cautions against considering self-efficacy as a stable overarching trait, self-efficacy is belief based and prospective in nature and thus domain-specific and may change dramatically depending on domain, situation or with experience or over time. While procrastination is considered to be a relatively stable trait, self-efficacy is context dependent and thus the correspondence between the measure of self-efficacy and the outcome variable (procrastination) may not be a close one (Klassen et al .2008).

Following the line of reasoning of Klassen et al. (2008) self-efficacy for self-regulation may be a better match with procrastination then measuring general academic self-efficacy as is frequently done in procrastination research (Klassen et al, 2008). Since procrastination has been conceptualized as a failure in self-regulation and even been described as a quintessential form of self-regulatory failure (Steel, 2007), it seems reasonable to match procrastination with a measure of beliefs in ones capabilities to effectively self-regulate. Especially compared to academic self-efficacy, since this construct doesn't really cover timely completion of tasks, which is a core fundamental of procrastination (Klassen et al 2008). It is entirely possible for a student to be highly confident in his or her ability to complete a challenging academic task, such as writing a thesis, but still not being able to get it done in time. A measure such as self-efficacy for self-regulation thus seems much better suited when procrastination is the criterion variable (Klassen et al. 2008).

In support of this, Klassen et al. (2008) found that self-efficacy for self-regulation indeed were the strongest individual predictor of procrastinatory tendencies among college students (at $r=-.59$, a strong correlation). Klassen et al. (2008) also found self-efficacy for self-regulation to be a significant predictor for the negative impact of procrastination when controlling for GPA.

Wolters & Hussain, (2014) describes self-regulated learning as a process through which one regulate ones own learning through the use of various strategies of a cognitive, metacognitive,

motivational and behavioural nature. Wolters & Hussain, (2014) also Suggests that there may be a link between grit and self-regulated learning, where the use of self-regulated learning strategies functions as a mediator between the more distant and universal personality trait (grit) and concrete performance in a specific situation. The grittier an individual is the more likely he or she may be to use various strategies to take control of their own learning in an active and purposeful way. In addition Klassen et al. (2008) describes self-regulation of learning as concerning such capabilities as prioritizing tasks, choosing appropriate learning strategies, consistently monitoring and evaluating ones knowledge and tailoring your approach to the situation at hand. This necessitates a certain measure of flexibility and awareness of both the situation and the various learning strategies available and the importance of employing them on a consistent basis (Klassen et al.2008).

Procrastination and it's correlates:

Based on the above literary review it seems that although research on procrastination and it's correlates have been plentiful the relationship between procrastination and grit and self-efficacy for self-regulation has not been widely explored. A previous study by Wolters & Hussain (2014) did found negative correlations of moderate strength between grit and procrastination and this seems consistent with theory that conceptualizes both grit and procrastination as strongly related to conscientiousness with correlations of $r = -.77$ (between grit and conscientiousness as reported by Duckworth & Quinn, 2009) and $r = -.56$ (between procrastination and conscientiousness Morris & Fritz 2015) having previously been recorded. Due to the close ties with conscientiousness and based on the conceptualizations of the two constructs it is safe to say that both can be related to self-regulation, or a failure thereof in the case of procrastination (Steel, 2007, Duckworth & Quinn 2009). Conceptually the two constructs seem almost antithetical to one another and thus a negative correlation between the two seems reasonable (Steel, 2007, Duckworth & Quinn 2009) Additionally self-efficacy for self-regulation seems like it deserves more attention in research on procrastination based on the findings of Klassen. Et al. (2008) who reported self-efficacy for self-regulation as the strongest predictor of procrastination among several constructs previously found to be associated with procrastination. To the best of this authors knowledge, no previous study has investigated the relationship between grit and self-efficacy for self-regulation.

Klassen et al (2008), reports that among students, negative procrastinators show both tactical and strategical deficiencies compared to neutral procrastinators. Negative procrastinators have

issues with efficiently employing their resources to complete short term goals, they thus commit tactical errors, as manifested by their tendency to spend more time each day procrastinating on alternative tasks (Klassen et al. 2008) They also procrastinate more than neutral procrastinators on long term projects and thus commit strategical errors, which are related to making long term action plans in an effort to accomplish long term goals. (Klassen et al. 2008). So negative student procrastinators commit more tactical and strategical errors as shown by their increased levels of procrastination on long term projects as well as in day to day academic life.

However, knowledge of cognitive (such as rehearsal and elaboration) and metacognitive (for example, prioritizing, organizing, monitoring progress etc.) strategies is not enough to succeed in university (Wolters & Hussain, 2014, Klassen et al. 2008). As Klassen et al. (2008) points out, most university students may be assumed to possess a certain degree of knowledge about learning strategies since they have gotten into university in the first place. But although knowledge of metacognitive strategies may allow the student to know what and how to do something, this is not enough, the student also needs to believe in their ability to successfully employ these strategies and that such usage of learning strategies will lead to positive academic outcomes (Klassen et al. 2008). Thus, self-efficacy for self-regulation seems a crucial component of being able to successfully self-regulate and successful self-regulation should in turn be associated with lower levels of procrastination since self-regulation has been described as being at the core of the phenomena of procrastination (Steel, 2007).

Aim

The aim of the current study was to add to the area of procrastination research by exploring the relationship between procrastination and grit and self-efficacy for self-regulation.

This could add to the understanding of procrastination and it's relation to other factors of both a dispositional nature (grit) and motivational (self-efficacy for self-regulation) nature (Duckworth & Quinn 2009, Wolters & Hussain 2014).

The study also aimed to explore whether self-efficacy for self-regulation could possibly be a mediator between grit, and procrastination. If self-efficacy for self-regulation were to be found to mediate the relation between grit and procrastination this could carry important implications for the treatment of procrastination since self-efficacy and it's sources (as described by Usher

& Pajares, 2006) for self-regulation is considered to be highly situational and malleable and thus likely to be amenable to intervention (Klassen et al 2008).

The research questions the study aimed to answer were thus as follows: 1. Is grit and procrastination correlated? 2. Is procrastination and self-efficacy for self-regulation correlated? 3. Is grit and self-efficacy for self-regulation correlated? 4. Could self-efficacy for self-regulation be an eventual mediator in the relationship between procrastination and grit?

Hypotheses:

More specifically the following hypotheses were posited based on previous research and theory reviewed above:

1. Procrastination would be negatively correlated with grit, 2. Procrastination would be negatively correlated with self-efficacy for self-regulation, 3. Grit and self-efficacy for self-regulation and grit would be positively correlated, and finally 4. Self-efficacy for self-regulation would be a mediator of the relationship between grit and procrastination.

Method

Participants:

A convenience sample consisting in total of 227 psychology and nursing undergraduate students at a mid-size public university in southern Sweden, completed the questionnaires. However, the decision was later taken to exclude the 17 surveys that were administered in English to international students in order to remove the potential of bias that may arise from using different language versions of the questionnaire in the same study. Additionally, the fact that not everyone in the class had English as their first language caused some later concerns that not everyone had understood the questions.

Of the 210 students who completed the questionnaires in Swedish, two were later removed due to numerous missing answers. The final sample thus consisted of 208 participants, of which 153 were women (74% of all participants). Ages of participants in the study ranged between 19 and 73, with a mean just above 26 and a standard deviation of 6.9. Data from the remaining 208 participants were used for the statistical data-analysis further expounded below. It is estimated that the response frequency was very high, approximately 98-99% of the students who were

present in the classroom when the questionnaires were administered are estimated to have elected to participate in the study.

Measurements:

A total of four measures were used in this study. For procrastination two measures were used in order to better cover different aspects of the complex construct. One measure focused on academic procrastination, which can be defined as “to voluntarily delay an intended course of study-related action despite expecting to be worse off for the delay” (Steel & Klingsieck, 2016 p.37). While the other measure was a more general measure of procrastination and focused on the irrational aspects of dysfunctional delay (Steel 2010).

The Academic Procrastination Scale-Short Form (APS-S)

To measure academic procrastination a Swedish translation (made by the researcher and approved by the supervisor) of the Academic Procrastination Scale-Short Form (APS-S) was used. The APS-S is a unidimensional 5 item measure of general academic procrastination, an example of an items is: “I put off projects until the last minute” (Yockey, 2016). The APS-S is a shorter version of the 25-item Academic Procrastination scale (APS) that was initially constructed and validated by McCloskey & Scielzo (2015). McCloskey & Scielzo (2015), found academic procrastination measured by the full 25-item APS to predict lower GPA. They also found academic procrastination to fully mediate the relationship between conscientiousness and GPA. Furthermore they also found APS to predict GPA over and beyond a standardized academic test (the SAT), scores on which, is frequently used as part of the admissions process to colleges in the USA.

Items on the APS-S are scored on a 5 graded scale with endpoints at 1=agree and 5=disagree. A higher score corresponds to a higher level of academic procrastination. Yockey (2016), reported that the APS-S showed good convergent validity with other measures related to academic procrastination. Yockey (2016) also states that the measure exhibited better psychometric attributes compared to some of the measures most frequently used to assess academic procrastination. Yockey (2016) concluded that the APS-S seems to be a parsimonious alternative with good psychometric properties that can be used to assess academic procrastination. The internal consistency reliability, Cronbach's alpha or (α) was reported at .87 by Yockey, (2016). The (α) value for the translated version of the APS-S, in the current study were .868 which is virtually identical to Yockeys' (2016) findings. The translated, Swedish,

version of the questionnaire used in this study is available from the author of this thesis upon request.

The Irrational Procrastination Scale (IPS)

For a general measure of procrastination, a Swedish version of the Irrational Procrastination Scale (IPS), developed by Rozental et al., (2014) was used. The Swedish version of the IPS is a translation of the original English version presented by, Steel (2010). Steel (2010) reported that the English version of the IPS is a unidimensional, nine item measure, of procrastination (focusing on irrational or dysfunctional delay) presented by Steel (2010). The items are scored on a 5-graded scale with endpoints at, 1= not often at all or not at all true for me and 5= very often or true for me. An example of an item would be “at the end of the day, I know I could have spent the time better”. Higher scores indicate a greater degree of procrastination. In an attempt to validate the Swedish version of the (IPS), Rozental et al., (2014) found that the Swedish version of the IPS had good psychometric properties, as evidenced by adequate internal consistency and an excellent intraclass correlation coefficient (ICC) of .83. They also found the IPS to be highly correlated with the pure procrastination scale developed by (Steel, 2010) at (r .79). Rozental et al., (2014) found that the IPS demonstrated adequate internal consistency, as indicated by an (α) value of .76 and Steel (2010) reported an alpha value of .91 for the English version of the IPS. Cronbach’s alpha for the current study (using the Swedish version of the IPS) was .877 which is quite a bit higher than the (α) of .76 found by Rozenthal et al. (2014). Rozental et al., (2014) concluded that the Swedish version of the IPS can be considered a valid and reliable measure of procrastination.

The Self-Efficacy for Self-Regulated Learning scale

To measure self-efficacy for self-regulation the "self-efficacy for self-regulated learning scale" (Zimmerman, Bandura & Martinez-Pons, 1992) was used (translated into Swedish by the researcher behind this study and approved by the supervisor). The scale contains 11 items that indicate to what degree students perceive themselves able to make use of various self-regulated learning strategies (such as “how confident are you that you can plan your schoolwork?”). Items are scored on a 7-grade scale going from 1= (not well at all) to 7 (very well). Higher scores indicate a higher degree of self-efficacy for self-regulation. Previous research (Klassen, 2007, Zimmerman et al, 1992 and Klassen et al. 2008) have found the measure to display good psychometric properties. The (α) value of the measure have previously been reported at .87 (Zimmerman et al. 1992), .80 (Klassen et al, 2008) and .84 (Usher & Pajares 2006). In the

current study Cronbach's (α) were .81, which is comparable to previous findings. The translated, Swedish, version of the questionnaire used in this is available from the author of this thesis upon request.

The Swedish Grit-Scale

As a measurement of grit, the "Swedish Grit-Scale", Klingberg (2016) was used (retrieved from <https://fof.se/tidning/2016/10/artikel/javlar-anamma-i-skolan>), this 10-item scale was based on the "short grit-scale" (Grit-S), developed by Duckworth & Quinn (2009). Which is an 8-item measurement of the tendency to pursue long term goals with passion and determination (i.e. grit). An example of an item would be "new ideas and projects sometimes distract me from previous ones". Although no real explanation for why the Swedish-Grit scale had two extra items compared to the Grit-S could be found, the decision was taken to still use this translation since it seemed to correspond with the current version of Grit-S that is currently available at the personal website of Angela Duckworth (<https://angeladuckworth.com/grit-scale/>). On either the 8 or 10 item version the participant is asked to answer to what degree a number of statements relating to grit corresponds to them. The scale is anchored by endpoints at 1= not me at all and 5=very much like me and higher scores indicate a higher level of grit. The Grit-S is a shorter and psychometrically improved version of an earlier version of the scale known as "the original grit-scale" or Grit-O for short, (Duckworth & Quinn, 2009). In an effort to validate the Grit-S Duckworth & Quinn (2009) suggests that the Grit-S seems to possess, adequate consensual validity, test-retest stability and predictive validity. Duckworth & Quinn (2009) conclude that the Grit-S is psychometrically superior compared to the Grit-O. Eskreis-Winkler, et al. (2014) found internal consistency reliability estimates between .77 and .79 in 3 separate studies using the Grit-S while Duckworth & Quinn, 2009 reported alphas between (.73 and .83). Across several different samples using the scale. The internal consistency reliability estimates in the current study (using the 10-item Swedish-Grit scale, were (α) .79. It should also be noted that there currently does not seem to be any alternative for measuring Grit to the Grit-S.

Procedure:

The researcher of the present thesis, via a standardized email, contacted teachers that taught courses related to psychology or nursing, at the university in question during the spring semester of 2018, and asked them for permission to come into their classroom during lesson time and administrate some questionnaires to their students. If the teachers agreed, they were asked to notify their students about the fact that someone would come and ask them if they were

interested in participating in a study (at least 45 minutes prior to the researcher arriving), in order to give the students some time to consider whether they wanted to take part or not. When during the lesson the researcher were to arrive were left up to the teacher to decide, so that they could best plan their lesson around it. The researcher first introduced the study orally and then invited the students to participate, the introductions were presented in a standardized way. Special emphasize were placed on pointing out that participation was entirely voluntary and that confidentiality was guaranteed since the study were completely anonymous and the researcher had no way of matching the participants to a particular survey. The students were also ensured that data would be kept securely and that no one except the researcher and his supervisor and the examining professor would be able to access the questionnaires. The students were informed that the questionnaires would take about five minutes to complete and were further instructed to place completed questionnaires on the desk in the front of the classroom.

The researcher then exited the classroom and waited outside until the questionnaires had been completed in order not to put undue pressure on the students to participate. Additionally, the written instructions located at the front page of the questionnaire briefly introduced that the study aimed to explore dilatory behaviour, long term persistence and to self-regulation in a student sample, the voluntary nature of the study were again emphasized and students were informed that all data would be treated at a group level and presented in a master thesis in psychology. At the end of the introduction it was stated that by the turning in of a completed questionnaire the student consented that their data (from the completed questionnaire) would be used in the study. Data collection took place between January and March 2018.

After collection were completed the data were entered into SPSS v.24. Reverse scored items were recoded, in the opposite direction, when appropriate. The total scores for each individual on each measure were calculated and used for further analysis. Two questionnaires were excluded due to several missing answers. In the remaining 208 questionnaires a few missing answers were sporadically located among the items (about 30 from around 7000 answers in total), no participant had more than 2 missing answers in total (missing answers on sex and age was not counted). Missing answers on a question were replaced with the mean score on that item (i.e. single mean imputation). Upon inspection of the distribution of the variables, the “academic procrastination” variable, were found to be positively skewed in a positive direction (.54). To check what effect this would have on the correlation coefficients, both parametric (Pearsons product moment correlation) and non-parametric (Spearman's rank correlation) one-

tailed correlation tests were run so that the parametric and non-parametric coefficients could be compared. After considering the results of the correlation analyses the decision was made to go with the parametric version (more on this under results). Finally, in order to explore whether self-efficacy for self-regulation would mediate the relationship between grit and the two procrastination measurements, a one-tailed partial correlation analysis was run between grit and both of the procrastination measures while the influence from grit was controlled for.

Ethics:

The Declaration Of Helsinki (DOH) was originally established in 1964, the current version was adopted in 2013. The DOH was developed by the World Medical Association (WMA) and is concerned with outlining ethical principles for medical research on human subjects. The overarching purpose of the DOH is to protect the interests, safety and dignity of the individual participant in medical research (WMA, 2013). It is the responsibility of the researcher to take ethical aspects of his or her research under thorough consideration and carefully assess the risks for the individual involved in the research and weigh them against the potential benefits of eventual findings from the research (WMA, 2013). In addition, the risks must be continuously monitored throughout the research process and if unforeseen problems arise they need to be dealt with promptly. The DOH, (WMA, 2013) asserts that special care should be taken when the research involves groups of particularly vulnerable participants. In the current research the sample consisted of university students, and since they were not in a position of dependence towards the researcher, the judgement was made that the sample should not be considered as consisting of “vulnerable” participants. The DOH (WMA, 2013) also states that medical research on human subjects should be based on solid theoretical grounds and only be performed by researchers who are sufficiently knowledgeable in the area in question. The DOH (WMA, 2013) also states that medical research on human subjects needs to be justified and clearly described. In the current study, the researcher thoroughly studied the extant literature in order to gain a solid grasp of the area(s) concerned, and care was taken in order to clearly explain the aim of the research and why it is necessary in the introduction above. In line with the principles outlined in the DOH (WMA, 2013), the research was also submitted to the local ethic research committee (*Etikkommittén Sydost*) and the collection of data were not started until approval had been granted. The DOH (WMA, 2013) further emphasizes the need of protecting the individual participants rights to privacy and confidentiality. In order to guarantee the anonymity and confidentiality of the participants in the current study, the decision was taken to exclude any classes where the researcher knew any potential participants, and additionally the decision was

taken to collect as little demographic data as possible (only sex and age were collected) in order to ensure that any questionnaires could not be matched to a particular participant. Since there was no way for the researcher to connect a certain questionnaire to any individual participant and the completed questionnaires were only made available to the supervisor and examining teacher (in addition to the researcher) the anonymity and confidentiality of the participants in the study were safeguarded. When it comes to informed consent the DOH (WMA, 2013) outlines that the utmost care should be taken to assure that potential participants are aware of what exactly they agree to take part in and what is required of them as well as the voluntary nature of the research and their right to stop their participation at any point. In the current study, information about the aims of the study were given in both written and oral form.

In both the written and oral information, the voluntary nature of the research was specially emphasized and in order to lessen the pressure of students to participate they were informed by the teacher that someone would come and ask them to take part in a research study at least 45 minutes prior to the arrival of the researcher. The researcher also waited outside the classroom in order not to exert any undue pressure on the students to participate by his presence. Since the questionnaires were administered in a group setting there is always the risk that students may feel pressured to participate if all their peers do so.

However, if a student were concerned by this they could “pretend” to answer the questionnaire (and just draw or doodle on the paper instead) or just turn it in blank upside down on the desk in the front of the classroom, thereby none of their peers would know that they had not completed the questionnaires, and neither would the researcher who were not present in the room. In conclusion, ethical aspects of the current study were carefully considered throughout the research process and the researcher strived to make sure that any potential risks to the participants were eliminated or mitigated as much as possible.

Results

Results from this study, exploring the relationship between procrastination, grit and self-efficacy for self-regulation in university students are described in the following. Since one of the study variables (academic procrastination) were found to be somewhat skewed upon inspection of the scatterplot, both parametric (Pearson's product moment correlation), and nonparametric (Spearman's rank correlation) tests were run to determine which alternative should be used. The results showed that the two tests produced largely similar results. Since all

of the correlations remained significant at $p < .01$, none of the correlations changed signs and no correlation changed more than .023 in magnitude (between the two tests). The decision was made to proceed with the parametric alternative, which is statistically more powerful than the nonparametric version, and which would also allow for a partial analysis to be run so that hypothesis 4 could be tested.

It should be noted however that the magnitude of the correlation between grit and self-efficacy for self-regulation fell just below the .5 (using the Spearman's rho, compared to the effect size of .51 with Pearson's r), threshold suggested by Cohen (Wilson & Maclean 2011) as the cutoff for the effect size of a correlation to be considered strong.

The results of the correlational analyses using the (Pearson's r) test are shown in table 1.

Table 1

Results of bivariate correlation, all values are reported as Pearson's r .

	1	2	3	4
1. Grit	—			
2. Self-Efficacy for Self-Regulation	.51**	—		
3. Irrational Procrastination	-.57**	-.64**	—	
4. Academic Procrastination	-.59**	-.65**	.78**	—

Note: ** $p < .01$, one-tailed. $n = 208$

The results displayed in Table 1 shows that all the correlations performed were significant at the $p < .01$ level. Additionally, using Cohens' guidelines (Wilson & MacLean, 2011) of determining the strength of effect sizes calculated as r , all correlations were significant at the $p < .01$ level. This, of course, also means that the coefficient of determination (r^2) values were above .25 which can be considered as strong according to Cohen's guidelines (Wilson & MacLean, 2011). This means that every variable explained at least 25% of the variance in the scores of the respective other variable it was compared to. Based on the results shown in table 1 hypotheses 1, 2 and 3 were supported. Both measures of procrastination, the IPS and APS-S respectively, were found to correlate strongly in a negative direction with the measure of grit (Swedish grit scale) at $r = -.57$ (with IPS) and $-.59$ (with APS-S) and were both significant at $p < .01$. Thus hypothesis 1 were supported. Both measures of procrastination were also strongly

negatively correlated with self-efficacy for self-regulation at $-.64$ (IPS) and $-.65$ (APS-S), both significant at $p < .01$ hypotheses 2 were thus also supported. As predicted in hypotheses 3 grit and self-efficacy for self-regulation were also found to be strongly positively correlated and significant at $p < .01$ at $.51$. Additionally, the strong positive correlation between the IPS and the APS-S (at $.78$) can be noted.

The result of a one-tailed partial correlation between grit and the two measures of procrastination while controlling for the influence of self-efficacy for self-regulation are shown in table 2.

Table 2

Partial correlations between Grit, Irrational procrastination and Academic procrastination, controlling for Self-Efficacy for Self-regulation.

	1	2	3
1. Grit	—		
2. Irrational Procrastination	$-.36^{**}$	—	
3. Academic Procrastination	$-.39^{**}$	$.62^{**}$	—

Note: $**p < .01$, one-tailed. $df = 205$

The results in table 2 shows that grit is still significantly correlated with both the IPS and APS at $p < .01$ however the magnitude of the correlations have fallen considerably compared to the zero order correlations. The value r for the correlation between grit and the IPS has fallen to $-.36$ from $-.57$ and r for the correlation between grit and the APS-S has fallen to $-.39$ from $-.59$. In terms of variance explained (r^2) this means a decrease in the variance explained of roughly 19% for the IPS (from about 32% down to 13%) and about 20% in the variance explained (from about 35% down to 15%) for the APS-S. Self-efficacy for self-regulation may thus cautiously be considered a partial mediator (more on this in the discussion) and hypothesis 4 is thus supported in part.

Discussion

In this study that explored the correlations between procrastination, self-efficacy for self-regulation and grit in a sample consisting of 208 university students (74% female, with a mean age of about 26) at a mid-sized public university in southern Sweden. The first three hypotheses

in the current study were supported. As predicted both measures of procrastination were negatively correlated with grit as well as with self-efficacy for self-regulation. Also Grit and self-efficacy for self-regulation were positively correlated. All the correlations were significant at $p < .01$, with strong effect sizes ($r > .5$) according to Cohens guidelines (Wilson & MacLean, 2011). Concerning the question if self-efficacy for self-regulation would mediate the relationship between grit and the two procrastination measures (hypotheses 4), the answer is a bit more up to interpretation, since the relationship between grit and each of the two procrastination measures were still significant at $p = .01$ and were both of a moderate strength. However, since the percentage of explained variance were dramatically reduced (as detailed under results) self-efficacy for self-regulation can be argued to at least partially mediate the relationship between grit and the two procrastination measures, so in conclusion hypotheses 4. were partially supported.

The results of the current study fall in line with much of the previous research in the relevant field(s). To begin with, the strong correlation between self-efficacy for self-regulation and both measures of procrastination (the IPS and the APS-S) found in this study were similar to those reported by Klassen et al. (2008), with the correlations in the current study being slightly stronger. This finding supports the claims of Klassen et al. (2008) about the close link between self-efficacy for self-regulation and procrastination. This makes sense considering that Steel (2007) noted the central role that self-regulation is theorized to have in procrastination. Also, the strong correlations found between self-efficacy for self-regulation and two measures of procrastination lends support to the statement by Klassen et al. (2008) that self-efficacy should show stronger relationships to another variable when the respective variables are measured at the same level. In the case of self-efficacy for self-regulation and procrastination it does seem to be quite a good match since both are measured at a fairly general level. Reports of ones, beliefs to successfully self-regulate on a variety of academic tasks seems to correspond quite well to a measure of ones tendency to procrastinate both in general (the IPS) and with specific regards to school activities (the APS-S).

Both measures of procrastination were also found to be strongly negatively correlated with grit, the findings in the current study were in the same direction as Wolters & Hussain (2014) but considerably stronger. In the current study grit were also found to be strongly positively correlated with self-efficacy for self-regulation, as predicted, to the best of this authors knowledge this was the first study to directly investigate this relationship. However, when

interpreting the correlations involving grit, some issues regarding the validity of the measurement should be considered. In an attempt to clarify the relationship between grit and seemingly similar constructs, Muenks et al. (2017.) investigated the relationship between grit and other conceptually similar constructs (such as self-control, effort regulation, conscientiousness and cognitive-self regulation). These constructs come from the three domains of personality theory, motivation and educational & developmental psychology. They found that the concepts overlapped considerably, both theoretically and empirically, with similar constructs from the self-regulation and engagement literature as well as other constructs hailing from the same area as grit; personality theory. Therefore, Muenks et al (2017) suggests that a jangle fallacy may be in play in regards to grit and other closely overlapping constructs. A jangle fallacy occurs when theoretically and empirically very similar constructs are given different names. The authors express that one reason for this may be the fact that different domains of psychology research publish their results in different journals and individual researchers may not pay as much attention to research that is published outside of their domain. Muenks et al. (2017) notes that this problem with the jangle fallacy does not just pertain to grit, the same results would probably have been found if one of the other constructs in the study had been focused on.

Muenks et al. (2017) express a concern that jangle fallacies may be seen as indicators of a serious problem in the area of psychological research at large. Namely that psychological researchers frequently struggle with clearly and consistently defining constructs and/or fail to properly operationalize their construct by developing questionnaires that are congruent with the definition and theoretical underpinnings of the construct and exclude questions that better represents other theoretical constructs. Muenks et al. (2017) thus urges for the development of a measurement of grit that captures the focus on pursuing a superordinate goal with great passion and determination over years or even decades. This focus on the long-term is what makes grit unique and as Muenks et al. (2017) notes the currently most frequently used measurement, the Grit-S (Duckworth & Quinn 2009) does not really seem to tap into this focus on the long term, instead it mostly uses “later” when referring to temporal periods rather than the years or decades that is emphasized conceptually (Duckworth & Quinn, 2009). Based on this, the strong correlations between grit and self-efficacy for self-regulation and procrastination may be (at least in part) due to overlapping aspects of the measurements and represent their common conceptual core of self-regulation and their close ties to conscientiousness (Steel, 2007, Muenks et al 2017, Duckworth & Quinn, 2009). In addition to the conceptual overlap

between grit and similar constructs related to self-regulation and conscientiousness suggested by Muenks et al. 2017, this author would like to suggest a further concept that may need to be differentiated from grit, namely obsession. To illustrate this consider two famous literary figures, Captain Ahab (from *Moby Dick*, by Herman Melville) and Jay Gatsby (from *The Great Gatsby* by F. Scott Fitzgerald) both characters doggedly pursue an overarching and consuming goal (for Captain Ahab the goal is to get revenge on the whale that bit of his leg and for Gatsby the goal is to win back his ex-girlfriend, Daisy) with great passion and determination over a very long stretch of time. Thus, they could both be argued to be highly gritty, but they could also be argued to be obsessed. Based on the current definition of grit it thus seems almost identical to obsession in some cases, so the question of where grit ends and obsession begins should be further explored.

Since the relationship between the dispositional trait of grit and procrastination falls rather sharply when self-efficacy for self-regulation is controlled for in the partial correlation analyses, this (along with the strong correlational findings between self-efficacy for self-regulation and procrastination reported above) indicates that self-efficacy for self-regulation seems to play an important role for procrastination (as previously described by Klassen et al. 2008). Compared to grit and other stable individual traits self-efficacy for self-regulation are considered to be quite malleable (Klassen et al. 2008) and this could make it a suitable target for interventions that aim to reduce procrastination.

As Klassen et al. (2008) notes, to successfully decrease procrastination it seems that students who struggle with procrastination may not just need help with developing strategies to better their ability to successfully regulate their own learning (such as planning, monitoring their work etc.) they may also need to increase their beliefs in their ability to consistently put these strategies into use even in the face of distractions, setbacks or when stressed (Klassen et al 2008).

Usher & Pajares (2006), found that among the sources of self-efficacy (mastery experience, vicarious experience, social persuasions and emotional and physiological states) mastery experience (ones interpretation of previous achievement in a specific area) tended to be the most important predictor of both academic and self-regulatory self-efficacy, among middle school students. Rather than the objective performance it is the subjective interpretation of said performance that is important for ones self-efficacy, (according to Usher & Pajares 2006) a

student may perform very well (objectively) on a task but still interpret the result as a failure and thus experience a decrease in self-efficacy. This mastery experience does not only pertain to academic self-efficacy but also to self-efficacy for self-regulation that regards ones beliefs in ones capacities to efficiently make use of various regulatory strategies (such as cognitive or metacognitive) to successfully complete work on time.

Apart from mastery experience, Usher & Pajares (2006) found that social persuasion (from important others) were an especially important source of both academic and self-regulatory self-efficacy for girls, while vicarious experience (model learning from watching an important or similar other succeeding at a task) were important for boys. This suggests that well timed, carefully constructed praise or encouragement from teachers may be especially beneficial for young girls when it comes to developing self-efficacy about their self-regulatory capabilities and academic proficiency.

Usher & Pajares (2006) description of self-efficacy for self-regulation as open to influence through; mastery experiences, vicarious experiences (especially for boys) and social persuasion (especially for girls) this opens avenues for the possibility of trying to directly effect students self-efficacy for self-regulation which may be combined with more traditional methods frequently offered by learning assistance professionals, such as interventions targeting planning or time-management (for a more detailed description on various methods to treat procrastination as a learning assistance professional consult Steel, 2007 or Kachgal et al. 2001).

An effort to improve a students self-efficacy for self-regulation shouldn't be too hard to integrate into the daily work of learning assistance professionals. After relevant skills (such as planning or time-management skills) has been practiced with the procrastinator for one or more sessions the learning assistance professional could encourage that student to turn their newfound skills into practice. In addition to identifying problem areas related to procrastination and attempting to remediate those by teaching relevant study, time or self-regulation strategies a learning assistance professional could also incorporate a focus on improving self-efficacy for self-regulation by letting the student try out the skills that have been trained. Thereby the student hopefully will, with the support of the learning assistance professional achieve a positive outcome such as the timely completion of an assignment, more leisure time (due to more effective planning for instance) or better grades. This experience of successfully having implemented various self-regulating strategies and the positive outcomes resulting from the use

of these strategies, should increase the procrastinating students' self-efficacy for self-regulation, by providing them with a "mastery experience" (Usher & Pajares 2006).

Strengths and limitations:

The inclusion of two different measures of procrastination in the current research can be considered a strength. Both the measurements showed highly similar correlations with each other when correlated with either grit or self-efficacy for self-regulation. When it comes to limitations it is first and foremost important to note that the correlational methods used in the current study means that causality cannot be assumed. No conclusions on whether self-efficacy for self-regulation actually causes procrastination can thus be made on the basis of the results in this study.

Additionally, the use of the Swedish-grit-scale in this study is problematic, as all previous research on the scale has been done using the 8-item version (Duckworth & Quinn, 2009), to the best of this authors knowledge neither the Swedish (Swedish grit scale) or the English version (as retrieved from <https://angeladuckworth.com/grit-scale/>) of this 10-item scale have been validated. The initial intention of the present study was to use only use 8 of the items (the 8-items contained in the grit-s) on the 10-item Swedish grit-scale. However, due to the similar wording of some of the items and the room for interpretation that is left by a translation there were some difficulties in identifying which of the 10 translated items corresponded to which of the 8 additional items and the decision was then made to retain the 10-items measurement in order to avoid any mistakes. Additionally, the validity of the 8-item version of the scale (Grit-S) presented by Duckworth & Quinn, (2009), has been questioned by Muenks et al. (2017) that suggests that changes need to be made to the measure to ensure that it better captures the underlying conceptualization of grit. The reason to use the measure in this study despite the documented problems was due to a lack of alternatives, to the best of this authors knowledge, no other validated measure of grit currently exists.

Apart from the measure of grit, two of the other measures used in the study (the APS-S, and the "self-efficacy for self-regulatory learning scale") were translated by the researcher, due to time constraints validation of the translations were not conducted. The translation of the questionnaires and the decision to use them in the study were approved by the supervisor of the researcher. It should be noted that the translated versions displayed similar internal consistency estimates (i.e. similar Cronbachs (α) values) compared to previous research.

Another limitation is that the researcher had very little control over exactly how and when the teachers involved in the study chose to brief their students. On more than one occasion the teacher had forgot to inform their students about the arrival of the researcher, and the students were thus not given any time to consider their participation. If possible, an arrangement would then be made with the teacher for the researcher to come back one or a few hours later. Allowing the teacher sufficient time to inform the students as initially planned. However, in one case there was no possibility of rescheduling the appointment, the introduction of the researcher by the teacher was immediately followed by the presentation of the study by the researcher. Thus, the students were not given any time to consider their participation. However, to somewhat mitigate the risks of students feeling pressured to participate, the voluntary nature of participation was given extra emphasis in this instance.

Future implications and conclusion:

The current research focused on a sample of university students, future research on self-efficacy for self-regulations role for procrastination should maybe focus on groups of identified negative procrastinators to identify if a similarly strong correlation can be found in that particular group. Also, in addition to using self-reported measurements of procrastination as was the case in the current study, future researchers may consider adding behavioural measures of procrastination. In order to study if the results found with self-report measures in the current study will be replicated with a more “objective” measure of procrastination behaviour.

The current study found self-efficacy for self-regulation to be strongly negatively correlated with each of two different measures of procrastination in a sample of undergraduate students at a midsize public university in southern Sweden. However due to the correlational nature of this study no conclusions can be made about the causal nature between self-efficacy for self-regulation and procrastination. This should be remedied in future studies by using a more rigorous design, perhaps of a longitudinal nature that would allow for causal conclusions to be drawn. Further research should also investigate self-efficacy for self-regulation as a potential mediator in the relationship between a stable higher order dispositional/personality trait and procrastination. This study was (to the best of this authors knowledge) the first to explore the relationship between grit and self-efficacy for self-regulation and a strong positive correlation was found($r=.51$). However, due to the concerns raised by Muenks et al. (2017), about the construct validity of the Grit-S and the dearth of alternatives it would, in future studies, perhaps

be better to replace grit with another higher order personality construct with measures that have been thoroughly validated. Despite this, the current study filled an important gap by highlighting the potential importance of Self-Efficacy for Self-Regulation in procrastination research by showing strong correlations between the two constructs in a sample of Swedish university students. The current research also pointed out the need to, more clearly, differentiate grit from obsession and also (like Muenks et al. 2017), emphasize the need for a more conceptually valid measurement of grit.

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