Interventional procrastination strategies for young adults in virtual settings: A systematic review

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Joy Xu,¹ Muntaha Marjia,² Kundan Ahluwalia,¹ Dana Kukje Zada,¹ Nazgol Tavakolizadeh,³ Margaret Dao¹

¹ McMaster University, Hamilton, ON, Canada

² Ryerson University, Toronto, ON, Canada

³ University of British Columbia, Vancouver, BC, Canada

Contact Info: joyxu@gmail.com

ABSTRACT

Background:

The phenomenon of academic procrastination affects nearly 95% of post-secondary students within academies with its association seen in reduced academic performance. Amidst the onset of COVID-19, this systematic review aims to provide insight towards potential virtual interventions to support personal management of academic procrastination for young adults.

Methods:

The selection procedure followed the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines. The protocol was registered with PROSPERO (record ID: CRD42021234243). Studies were reviewed based on a pre-determined and piloted screening tool with study screening and extraction performed independently among two authors. After reconciliation, disagreements were settled by a third author. Study quality was assessed using the Mixed Methods Appraisal Tool (MMAT) in duplicate. Heterogeneity in study designs, outcomes, and measurements precluded meta and statistical analyses; thus, a qualitative analysis of studies was provided.

Results:

A total of 49 studies were included with identification of two primary web-based interventions for reducing academic procrastination in a mobile app setting. The first intervention involves emotional management through increasing tolerance and modifying negative emotions which determines the activity with the highest likelihood of procrastination each day, and the subject's resilience or the subject's commitment should be emphasized. The second intervention involves mental imagery for subjects to feel an affinity for his/her future self, and thus decrease procrastination behaviours.

Conclusion:

Two main virtual interventions were determined from the systematic review: (1) an intervention for managing personal emotions, and (2) an intervention that involves creating a mental image of one's future self.

KEY WORDS

Procrastination, young adults, virtual, psychology, interventions, students, college

Background

Procrastination is a commonly experienced phenomenon characterized as a maladaptive behavioural tendency where the individual may lack effective self-regulation. Consequently, the behavioural outcome resembles an irrational delay or avoidance of certain tasks. As a result, individuals may intentionally avoid responsibilities despite their awareness of potential ensuing consequences.

The underlying cause of procrastination is often theorized to stem from several factors. Firstly, the complex behaviour of procrastination may not merely reflect a lack of motivation or the inability to resist temptations. Rather, procrastination encompasses a lack of acting on intentions [1]. The correlation between procrastination and setting intentions can be seen by a study conducted by Steel *et al.* where a low measure of intention was observed in a cohort of 152 undergraduate students partaking in an online introductory psychology course. However, a strong correlation was observed between procrastinators and a lack of acting on intentions, which contrasted with non-procrastinators [2]. From an evolutionary lens, procrastinators approach life at a fast pace in comparison to non-procrastinators, which manifests physiologically and psychologically as a result of an individual's environment [3]. Thereby, procrastination is theorized as a beneficial behaviour within unpredictable environments where impulsivity and focus on immediate rewards is necessary. However, these behaviours are no longer consistent with present lifestyles, as self-regulation for future rewards/consequences are favoured. Thus, individuals experiencing habitual chronic procrastination become incompatible with modern day needs in a cycle of additive stress, worsened performance, and greater chances of developing mental or physical illnesses [3,4].

Regardless of the numerous theories determining its cause, procrastination continues to serve as a prominent phenomenon, particularly in young adults within academia [5]. It has been found that approximately 80 - 95% of post-secondary students have procrastinated in some capacity, while 50% of these students have experienced detrimental procrastination [6]. Zarick *et al.* explored the prevalence of procrastination in a sample of 200 students revealing that 95% of students procrastinate to some degree and 42% of students procrastinate chronically [5].

Its prevalence also yields academic decline, where these behaviours tend to negatively affect educational achievements in various ways, including lowered grades, withdrawal from courses, and reduced accuracy [5]. Zarick *et al.* showed that out of the 200 students in the study, one-third and one-fourth of students reported that procrastinative tendencies affected the quality of their assignments and exam results respectively [5].

Although procrastination is evidently prevalent in student populations, there is evidence suggesting that these young adults are willing to change these behaviours. Over half of the student population agreed

that procrastination requires improvement and should not be a regular aspect of post-secondary education [5]. The prevalence of procrastination is also observed in adult populations where 15-20% of adults are classified as chronic procrastinators [7].

Despite the prevalence of literature on procrastination prevention strategies, procrastination continues to be an issue affecting productivity and wellbeing. Most interventional studies on procrastination share common challenges in participant compliance due to barriers in intervention designs. These barriers are often attributed to the lack of feasibility, guidance, or usability [8]. For example, interventions requiring attending training sessions or reading material surrounding procrastination tend to have high attrition as individuals feel less motivated and procrastinate on completing these additional tasks. Similarly, group interventions or even one-on-one guided interventions could deter those with heavy workloads, time constraints, social anxiety, and more [8]. Therefore, introducing procrastination intervention through a mobile application can serve as an accessible tool for individuals to take more control over the intervention. The feasibility of this intervention can also be accredited to the prevalence and usability of smartphones, which enable individuals to execute the intervention at their own time and preferred environments. Thus, a virtual intervention may reduce high attrition and dropout rates. Although there has been a dramatic rise in productivity applications, most applications are not rooted in evidence-based approaches nor research appraisal [8].

Therefore, this systematic review aims to assess effective procrastination prevention strategies to be integrated towards virtual interventions, particularly within the development of the Felicity App. The Felicity App is a virtual application targeting individuals aged 15 to 40 years of age to provide productivity enhancement through psychological interventions in various aspects, including procrastination. The systematic review will provide effective interventions for further research to be incorporated as a major feature within the application. This systematic review aims to answer the following research question: What are virtual procrastination prevention strategies that can be implemented into a mobile app setting to promote productive behaviour amongst individuals that are between 15 to 40 years old?

METHODS

The selection procedure followed the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines. The protocol of this systematic review was registered with PROSPERO (record ID: CRD42021234243). Within this systematic review, three databases (Web of Science, PubMed, and ProQuest) were searched from January 4, 2020 to January 17, 2020. Grey implementation-focused literature was searched through the American Psychological Association (APA) webpage. Articles were limited to publication years between January 1995 to December 2020. The eligibility criteria ensured that only studies meeting the following standards were used: (i) Classified as a randomized controlled trial, meta-analysis, systematic reviews, and/or grey literature; (ii) Involved healthy human participants between the ages of 15 to 40; (iii) Included participants of both genders in

developed countries; (iv) Strategies and concepts with potential for direct application or manipulation in a virtual setting. Using a convergent integrated synthesis approach, a combination of qualitative and quantitative studies were determined. Data screening, quality appraisal, and data extraction was performed by two independent authors followed-by reconciliation and third-author resolution for potential disagreements. Heterogeneity in study designs, outcomes, the scale of measurements, and times precluded meta-analysis. Thereby, a qualitative analysis of included studies was provided using a convergent integrated synthesis approach.

Study design and setting

This systematic review analyzed the effectiveness of virtual procrastination intervention strategies to determine the relevancy of included studies. A virtual application setting was chosen as the medium for optimal accessibility for the target audience of individuals between the ages of 25 and 40. According to 2018 data from Statistics Canada, 88.1% of Canadians from 15 years of age and older owned a smartphone [9]. Furthermore, within this age group, 45.4% of individuals check their phone every 30 minutes. Cellphones are frequently used amongst the target demographic and subsequently, presenting evidence-based procrastination interventions through a virtual application can enhance accessibility and convenience. Additionally, this application is optimal for adults and adolescents who are employed and/or are students residing in developed countries with greater access to cellphones as they are more likely to become frequent users of the application.

The mixed-method study design was used as qualitative and quantitative information were analyzed through a convergent integrated synthesis approach. Qualitative data provided identification of common characteristics and patterns associated with procrastination such as common habits amongst chronic procrastinators and opinions on various procrastination prevention strategies. Quantitative data presented measurable information for trends and patterns on subjects such as finding a potential correlation between procrastinating on an assignment. Using a mixed method research approach provided all forms of data to be processed, including numerical and observational data. A systematic review allows for a clear identification, selection and analysis of present literature that pertains to the research question being asked and extraction of data that could be implemented into the *Felicity App*.

Information Sources and Searches

Based on the eligibility criteria of this study, various forms of literature were reviewed including peer-reviewed and grey literature. Searches in databases (Web of Science, PubMed, and ProQuest) were conducted by researchers from January 4, 2020 to January 17, 2020. Studies were limited to the publication period between January 1995 to December 2020. Searches utilized keywords for procrastination, therapy, student, psychology, intervention, and app. To optimize relevance of topics within studies, various keywords were customized for the search (refer to Appendix 1.).

For grey implementation-focused literature, a search was conducted for documents on the American Psychological Association (APA) website (refer to Appendix 2.). The APA is an American organization consisting of over 122,000 professionals and students within the field of psychology in the United States. The APA works towards the advancement of psychological research, more effective communication of information relating to the field of psychology to the general public and the application of psychology to combat problems within society [10].

Documents found within each grey-implementation literature database were subjected to the same inclusion/exclusion criteria and research question as studies found within Pubmed, Web of Science and ProQuest. Grey literature sources were preferentially selected from government organizations and official organizations to enhance validity.

Eligibility Criteria

The inclusion and exclusion criteria for this study were predetermined. Studies were only included if written in English, psychology-based, and published between 1995 - 2020. Eligible study designs included randomized controlled trials, meta-analysis, systematic reviews, and grey literature. Studies were deemed suitable if the studied demographic consists of human subjects between the ages of 15 to

40 that were not diagnosed with any medical complications. Studies consisted of both genders residing in developed countries. Furthermore, studies were only included if strategies and concepts were directly applied or could be manipulated for usage in a virtual setting.

Data Collection Process and Abstraction

The search results gathered from implementing the search strategy were converted into EndNote (X8) for manual removal of duplicates.

The inclusion and exclusion criteria were used to synthesize questions for the screening tool with the purpose of searching the literature for articles specific to predetermined aims. 25 articles were chosen and individually screened by three authors (MM, NT and KA) during the pilot screening. Modifications to the tool were made with 11 questions to enhance data extraction and reduce bias, where the review of research methods, results, dates, and population were analyzed. The three independent authors reconciled discrepancies and re-modified the screening tool to consolidate objectivity and accuracy of the tool. The finalized screening tool received an accuracy score of 82%.

The modified abstract screening tool included two additional questions from the inclusion/exclusion criteria for enhanced specificity to suit the purpose of this systematic review. The abstract screening tool also adjusted inclusivity to various genders. Similarly, the tool was also modified to exclude literature which target profession-specific studies, as the application is intended to aid a diverse and general population. From various databases, 779 new articles were gathered through collecting related articles and references used in the included articles. 779 new article titles and abstracts were screened by two authors (NT and KA) using the refined screening tool.

Figure 2. Diagram of screening and study selection process

Identification of Relevant Studies and Data Extraction

From December 2020 to January 2021, independent authors used Web of Science, Pubmed and ProQuest with keywords to target the specific areas of procrastination. In addition to these databases, the American Psychological Association database was searched as a source of grey literature. From January 20, 2021 to January 25, 2021, with the application of screening tools, two authors (NT and KA) independently screened titles and abstracts of studies where disagreements would be reconciled. Further resolution of disagreements were performed through a third author (MM). The second round of screening took place from January 29, 2021 to January 31, 2021, where included abstracts proceeded for full-text screening by two independent authors (NT and KA), followed by reconciliation and further resolution of disagreements with a third author (MM). The first round of hand search screening where 565 articles went through abstract screening by two authors (NT and KA) between January 31, 2021, and February 7, 2021, produced 40 articles. Between February 7, 2021, and February 14, 2021, Full texts of 40 articles were further screened by the two authors (NT and KA), reconciled, and further disagreements were resolved with the third author (MM). In total, 23 studies were included. Data extracted from these sources included articles titles, study population and location, intervention strategies, implementation of intervention strategies and results.

Quality Assessment

Each included study was appraised for quality according to The Mixed Methods Appraisal Tool (MMAT) in order to reduce biases in the research process. The MMAT is a critical appraisal tool created for the appraisal of qualitative, quantitative, and mixed methods-based research based on method-specific questions. Assessment based on 5-item study design specific questions will assign an overall quality score to each included study. The MMAT will serve as an appropriate measure of quality for included studies in this mixed methods systematic review regarding procrastination. Assessing research quality using the MMAT has been tested and improved for content validity and clarity, increasing confidence and reducing bias in the results of this systematic review. However, more research is needed to determine inter-rater reliability of the MMAT which is significant to allow for reliable appraisal. Using the MMAT to critically appraise various forms of research is essential to ensure interventions introduced in the *Felicity App* are supported by reliable data.

The quality appraisal process began in February 2021 with two authors (DK and MD) independently appraising and scoring each of the 49 studies based on the MMAT 2018 guide. These scores were then reconciled between the two authors to resolve any disagreements with disagreements resolved by a third author. The reconciled appraisal for each of the 49 studies are outlined in table 1.

Data Extraction

Following reconciliation, data extraction was performed independently by the two authors (DK and MD) in March 2021. Results from data extraction were reconciled between the two authors to resolve any disagreements. The reconciled data extraction for each of the 49 studies is summarized in table 2.

RESULTS

Study Characteristics

A total of 49 articles were included in this systematic review. Of all of the articles, 34 were quantitative, 9 were randomized controlled trials, 5 were mixed methods studies, 1 was a qualitative study, and 1 was a non-randomized study. Furthermore, 7 are from Turkey; 4 are from Sweden; 7 are from the United States; 4 are from Canada; 2 are from Australia, China, and Israel; 12 are from Germany; 1 is from Slovak Republic, Taiwan, Iran, and Ireland. Some studies are from more than one country. All studies passed the initial screening questions and based on the MMAT these studies were rated from a scale of five to one with five being the highest and one being the lowest. Out of the 49 studies, 29 were assigned an overall score of five, 13 were assigned an overall score of four, 5 were assigned an overall score of three, 3 were assigned an overall score of two, and none were assigned a score of one. Characteristics for each category were analyzed to aid in the determination of the appropriate study type, and also provided appropriate determination of articles with procrastination interventions to be added into the *Felicity App*.

DISCUSSION

The systematic review analyzed 48 different articles to understand the psychological underpinnings of procrastination and various interventions that can be implemented for students to reduce academic procrastination. Academic procrastination is set within the context of actions/behaviours which delay academic activities, most commonly (but not limited to) studying for tests, doing homework, and more. This systematic review contributes to the already existing evidence base by extracting information on effective preventative measures for procrastination that have been tested and are supported by evidence. The quantity of relevant strategies combatting procrastination in present literature are limited due to the lack of virtual application or testing of these interventions. Most academic settings are reliant on in-person components, with few academic programs being completely online. From 2004 to 2016, the percent of American undergraduate students taking one or more online undergraduate classes went from 15.6% to 43.1% respectively [11]. The COVID-19 pandemic has further exacerbated this transition with online learning, given the requirements for social distancing and regulatory limitation for in-person interaction. With virtual delivery of education due to the COVID-19 pandemic, additional studies are required to fully explore procrastination interventions that can be applied to a virtual setting. In this systematic, many articles discuss potential causes and sources of procrastination rather than identify solutions for unproductive behaviour rooted in procrastination. Due to the heterogeneity of study design, times, participants, and outcomes, a meta-analysis on outcome measures was precluded. In Balkis et al.'s 2017 study *Gender differences in the relationship between academic procrastination, satisfaction with academic life and academic performance*, it was determined that male students are more vulnerable to the destructive effects of academic procrastination, both regarding academic performance and academic life satisfaction [12]. Ozer et al.'s 2020 study *Exploring academic procrastination among Turkish students: Possible gender differences in prevalence and reasons* and Özer et al.'s 2005 study *Academic procrastination: Prevalence, self-reported reasons, gender difference and it's relation with academic achievement* also corroborated this finding [13,14]. Balkis et al.'s 2009 study *Prevalence of academic procrastination behavior among pre-service teachers, and its relation with demographics and individual preferences* found that in pre-service teachers, there was a high degree of procrastination behaviour at 23% of teachers [15]. Brownlow et al.'s 2000 study *Putting off until tomorrow what is better done today: Academic procrastination as a function of motivation toward college work* found that the most important factors that contributed to academic procrastination were perfectionism, low extrinsic motivation, and attribution of one's successes and failures to external factors [16]. Eckert et al.'s 2016 study *Overcome procrastination: enhancing emotion regulation skills reduce procrastination* found that procrastination involves a difficulty in emotion regulation [17]. This finding was corroborated by Constantin et al.'s 2018 study *Anxiety, depression, and procrastination among students: rumination plays a larger mediating role than worry* [18]. Häfner et al.'s study *Avoiding procrastination through time management: an experimental intervention study* found success in using a short-term time management intervention in treating academic procrastination [19]. Haghbin et al.'s 2012 study *The Complexity of the Relation between Fear of Failure and Procrastination* found that perceived

competence has an effect on failing and procrastination [20]. Chun Chu et al.'s 2005 study *Rethinking Procrastination: Positive Effects of "Active" Procrastination Behavior on Attitudes and Performance* was able to identify 2 distinct types of procrastinators: active and passive procrastinators [21]. Similarly, Grunschel et al.'s 2013 study *Exploring different types of academic delayers: A latent profile analysis* found that there were 4 different types of procrastinators (instead of 2) [22]. Zacks et al.'s 2018 study *Academic interventions for academic procrastination: A review of the literature* found that instructional intervention from a teaching team is very effective in stopping academic procrastination, but more research is needed to determine individual interventions [23]. Svartdal et al.'s 2020 study *How Study Environments Foster Academic Procrastination: Overview and Recommendations* also looked at instructional interventions [24]. Kandemir et al.'s 2014 study *Reasons of academic procrastination: self-regulation, academic self-efficacy, life satisfaction and demographics variables* found that setting goals for the future served an important factor for motivating students [25]. Aznar-Díaz et al.'s 2020 study *Mexican and Spanish university students' Internet addiction and academic procrastination: Correlation and potential factors* found that increased internet usage correlated with increased academic procrastination [26]. Balkis et al.'s 2012 study *Analysis of the relation between academic procrastination, academic rational/irrational beliefs, time preferences to study for exams, and academic achievement: a structural model* found that having rational beliefs about studying decreased the likelihood of academic procrastination [27]. Blouin-Hudon et al.'s 2017 study *A mental imagery intervention to increase future self-continuity and reduce procrastination* found that the most effective method of improving procrastination was perceiving one's future self, such as creating mental imagery [28]. Boysan et al.'s 2017 study *Associations between procrastination, personality, perfectionism, self-esteem and locus of control* emphasized the value of family support in treating academic procrastination [29]. Johnson et al.'s 1995 study *An analysis of the contribution of the five factors of personality to variance in academic procrastination* evaluated the role of personality characteristics, and found that procrastination scores were inversely correlated with conscientiousness and significantly correlated with neuroticism [30]. However, Steel et al.'s 2016 study *Academic procrastination: Psychological antecedents revisited* found that procrastination was correlated strongly with conscientiousness, and not any other personality traits [31].

I. Emotional Management Process

A web-based intervention to emphasize managing emotions would be helpful in reducing academic procrastination. This includes increasing toleration to and/or modifying harmful emotions [18]. The practical execution of this intervention would involve identification (by the subject) of the activity with the highest likelihood of procrastination each day, followed by identification of whether the task generates aversive emotions or negative affectivity (e.g. contempt, disgust, guilt, boredom). Aversive emotions are feelings of fear, shame, anger, sadness, or hurt, whereas negative affect refers to negative emotions and behaviours such as sadness, disgust, lethargy, fear, and distress [32,33].

This can be done through questionnaires involving the following questions:

1. At what time today do you feel like you may procrastinate?
2. What is the hardest item on your "To-Do" list today?

3. What activities do you have to do today that you dread doing?

These questions are created to prime individuals to reflect on personal habits and thought patterns. Questionnaires may also incorporate visual cues to sustain the participation of individuals. For example, simple universal pictures such as emojis may be employed, due to its relatability and every-day usage among young adults. Within virtual settings, questionnaires may serve multiple choice questions to enhance simplicity and retain attention. The placement of multiple choice answers may also be considered, as certain ordering of answers may inadvertently influence decisions as well.

Upon assessing personal awareness, individuals should be prompted with potential next steps of identifying tasks which may elicit either aversive or affective emotions. Throughout the process, individuals should be educated on the theories behind procrastination and potential interventions. By gaining greater understanding of personal emotions and theories of procrastination, individuals may feel inclined to continue long-term pursuit of combating procrastination.

After filling in the questionnaire, the virtual space should provide solutions to suit either aversive or affective emotions. For potential aversive emotions, self-efficacy plays a major role in reminding individuals of personal resilience to overcome challenges. Self-efficacy may be bolstered through reminders of past achievements and personalized encouragement centralized on diligence (rather than intrinsic traits such as intelligence). For example, individuals may feel encouraged by reviewing previous accomplishments during adversity to be reminded of their potential. Individuals may also view analytics to see their present progress as a reminder of their diligence. For potential affective emotions, reminders of intention and commitment should serve as a stimulus for individuals to overcome delaying behaviours. For example, individuals may be encouraged to complete a task once recognizing how quickly/easily it can be done. Similarly, individuals may be reminded of their passion through reviewing long-term goals and future aspirations.

Additionally, emotions should also be modified in the long-term through regular maintenance for emotional control. Examples of these interventions include practicing relaxation exercises to alleviate build-up of negative emotions. Within a virtual setting, guided exercises can support an individual within supportive environments (i.e. ambient music and calming narrative to instruct appropriate techniques).

Upon completing the anticipated task, individuals should evaluate their effectiveness of coping and the particular solution that suited their need. A multiple choice reflection questionnaire with quantitative scales can be completed quickly and collect analytics on their behaviour. These statistics can be used to personalize their development and serve as future encouragement for their progress as well.

II. Mental Imagery

Mental imagery is an experience where an individual imagines visual depictions about a certain object, event, or scene. For example, thinking about what one will look like in 5 years is a form of creating

mental imagery about the future. The practical execution of this intervention could involve designing an audio script that creates a mental representation of a student at a certain point in time (notably, at the end of the semester) [28]. The audio script may include similar statements:

1. “Imagine yourself in __ months” (__ = the number of months the student is away from the end of the semester).
2. Imagine you’re sitting at your final exam desk at this very moment.
3. Imagine you’re getting your final grades back for this semester.

Within the virtual setting, these guided scripts could be pre-recorded and played for accessibility of the user according to preferences. The user may also set the average time they begin academic work on the average day in their preferences on the mobile app where notifications may remind users during those times. The mental images may cause the subject to feel an affinity for their future self, and thus decrease procrastination behaviours. One limitation to this approach, however, is that this intervention may only be useful for decreasing negative affect, and may not assist with reducing aversive thoughts. For example, when a subject is bored (which demonstrates negative affect), hearing this audio or reading these scripts may remind users of present goals. However, if the subject has a strong disinclination towards an activity they need to complete, this intervention may not serve as effectively.

Barrier to Effective Procrastination Reduction

Although these interventions show promise in reducing academic procrastination when applied to a mobile app basis, there may be barriers present that prevent effective procrastination reduction. The greatest barrier may be enforcing adherence to these interventions, especially since they are left to the free will of the subject. This occurs because subjects may avoid using the virtual interventions simply because they may desire procrastination rather than work. Circumstances that may trigger this behaviour include when the subject is feeling unmotivated to learn and would instead prefer to procrastinate which may overcome the initiation of these virtual interventions. For example, subjects may simply choose to not partake in certain interventions after some time. This problem can be addressed by introducing notifications and/or pop-ups to stimulate users to consider personal motivation. While this does not solve the problem (as subjects may simply turn off notification, a feature prevalent in most current smartphones, or subjects may simply turn off the app), the reminder serves to prevent simply forgetting the intervention as opposed to avoiding its usage. Another solution would be to implement a rewards system. This can take the form of a “points” that subjects receive when they successfully overcome the tendency to procrastinate on a specific day. However, there is no effective method to monitor if a subject is telling the truth when claiming that they overcame their tendency to procrastinate on certain days. So, this solution presents the problem that subjects can falsely claim that they overcame their tendency to procrastinate, despite not actually having overcome this tendency, leading to a false accumulation of “points” for individuals too focused on virtual incentives over personal growth.

Limitations

This systematic review sought to search the literature for effective procrastination interventions that can be implemented through a mobile application. This systematic review was limited to three databases: Web of Science, ProQuest, and Pubmed, which does not serve to fully reflect all current literature of procrastination interventions that can be implemented in a mobile application targeting young adults. The exclusion of other databases from the search limits the procrastination interventions that were reviewed, thus limiting the designed intervention. Although the target population is young adults (15-40 year olds), the majority of the included studies were limited to student samples, specifically university students. Including a greater portion of student-centred studies in this qualitative review excludes a wide range of the target population. Therefore, the intervention might be biased towards a student population rather than the intended young adult population, offering more effective benefits to a smaller subgroup of the target population. When designing the intervention, only studies with a score above 4 in quality were considered. Further research is required for quantitative approaches, as well as room for reporting publication bias and wider external validity.

Using the MMAT to critically appraise the included studies offered several strengths while limiting the systematic review in certain aspects. Since the MMAT allows for assessment of various study designs, the virtual interventions are not as restricted during study selection, allowing for use of diverse data to design a procrastination intervention. Assessing research quality using the MMAT has been tested and improved for content validity and reliability, increasing confidence and reducing bias in the results of this systematic review. The MMAT also allows for clear communication of the quality of each study by providing a score out of five for each included study. Although there are several benefits to using the MMAT in completing this systematic review, there are important limitations which must be considered. The use of this critical appraisal tool necessitates experience with various forms of research and data collection; the lack of this experience may affect the results yielded using this tool. Another limitation of the MMAT is potential variability in the reported reliability and quality of the tool in critical appraisal, therefore increasing subjectivity of the tool and in effect increasing bias in study results. The assignment and use of overall scores through the MMAT may not always serve informatively where a descriptive study could be more useful in obtaining a holistic understanding of the studies being evaluated.

Conclusion

This systematic review included 49 studies to determine the most effective methods of reducing academic procrastination via mobile app settings. The two main interventions determined include an intervention to tolerate and/or modify harmful emotions, and an intervention to help create a mental image of one's future self. The former intervention is carried out by identification (by the subject) of the activity with the highest likelihood of procrastination each day, followed by identification of whether the task generates aversive emotions or negative affect, then either a reminder of resilience or an attempt to commit to the task. Additionally, modification of emotions through practicing relaxation exercises should also be performed. The latter intervention is carried out by playing an audio script (or text for reading) that creates a mental representation of a student at the end of the semester, which is to be

played before the user begins doing academic work each day. Despite identification of the interventions required to reduce academic procrastination, more research needs to be done to determine whether these interventions are efficacious in reducing academic procrastination in a mobile-app setting.

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JX devised and supervised the project and secured funding acquisition. MM, KA, DZ, NT and MD wrote the manuscript. MM and NT created figures. DZ, NT and MD computed numerical data and created tables. KA and NT performed the article screening. DZ and MD carried out the quality assessment. All authors refined and approved the manuscript.

Database Searches

Appendix 1

Database	Search	Results
Web of Science	(Procrastinat*) AND (psych*) AND (student*) AND (interven*)	81
ProQuest	(Procrastinat*) AND (stud*) AND (psych*) AND (interven*) AND (app*)	77
PubMed	(Procrastinat*) AND (stud*) AND (psych*)	175

Appendix 2

Database	Search	Results
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American Psychological Association	(Procrastinat*) AND (stud*) AND (psych*) AND (education) AND (web page)	48
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Table 1:

	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.
Balkis M, 2017																*	*	*	*	*					
Balkis M, 2009																*	*	*	*	*					
Brownlow S, 2000																*	*	*	*	*					
Constantin K, 2018																		*	*	*					
Eckert, 2016						*	*	*	*	*															
Ozer B, 2009																*	*	*	*	*					
Ferrari J, 1995																*	*	*	*	*					
Glick DM, 2013																*	*	*	*	*					
Hafner A, 2014							*	*																	
Haghbin M, 2018																		*	*	*					
Chun Chu A, 2010																*	*	*	*	*					
Zacks, 2018	*	*	*	*																					
Svartdal F, 2020																					*	*	*	*	
Jackson, 2003																*	*	*	*	*					
Kandemir, 2014																	*	*	*	*					
Milgram N, 1995																*		*	*	*					

[illegible]

procrastination, satisfaction with academic life and academic performance		male.	of academic procrastination through a self-report T or F questionnaire, academic satisfaction scale and demographic information form to determine age, gender, and major. Coefficient of Pearson Correlation was utilized to set the relationships between the variables	n in terms of academic performance and academic life satisfaction	
Balkis, M.. Prevalence of academic procrastination behavior among pre-service teachers, and its relation with demographics and individual preferences	Turkey	Participants: 580 students (329 female and 251 male) in different fields at the Faculty of Education in Pamukkale University. Age range 19-28. API was designed to measure the tendency of students to procrastinate in their academic tasks. The completion	Aitken's procrastination inventory and personal information sheet were used to gather data. Coefficient of Pearson Correlation was utilized to set the relationships between the variables	23% of pre-service teachers exhibited procrastination behavior at a high level and 27% experienced average levels of procrastination. The average procrastination behavior scores for male prospective teachers is higher than the average	4/*****

		<p>lasted 10-15 minutes. Turkey test analysis was applied</p>		<p>for females. There is a negative correlation between the procrastination behavior and age of prospective teachers. The average scores for the students who prefer to study after 8PM is higher than the average of those who prefer to study early morning, at noon and the evening. The average scores for the prospective students who prefer to study a week before exams is higher than the average scores for those who prefer to study up to the very day and two weeks before the exam. There is a negative correlation between procrastination</p>	
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				n and academic achievement of prospective teachers	
Brownlow, S.. (2000). Putting off until tomorrow what is better done today: Academic procrastination as a function of motivation toward college work	United States	Participants: 96 undergraduate students (48 men and 48 women) Participants completed the study alone or in mixed-sex groups of 2-10 people.	The procrastination assessment scale-students was used to collect data on the frequency of procrastination, the reasons students procrastinate and an indication of how much desire exists to change. Attributional style was measured through the multidimensional-multi-attributional causality scale. Fear of negative evaluation was measured through the brief fear of negative evaluation scale to assess concern and apprehension about negative	Lack of extrinsic motivation, coupled with perfectionism and an external attributional style contributed to procrastination. Low-procrastinating students were more motivated by internal and external forces than were high procrastinators. Moreover, high procrastinators and those low in intrinsic motivation made external attributions (to context and luck) for their successes, but students who were intrinsically motivated took personal	4/*****

			evaluations received by others	responsibility for both their successes and failures. These findings suggest that both salient motivators and stable personality factors contribute to academic procrastination.	
Constantin K. (2018). Anxiety, depression, and procrastination among students: rumination plays a larger mediating role than worry	Canada	It is a cross-sectional study. Participants: 250 students who completed the Tuckman Procrastination Scale (TPS) and Difficulties in Emotion Regulation Scale (DERS)	Correlation analyses	Difficulty in emotion regulation is important in procrastination. Despite the limited association between DERS and TPS, the findings raise some potentially useful implications for procrastination studies and interventions	4/***
Eckert M.(2016). Overcome procrastination: enhancing emotion	Germany	Aimed to test the hypothesis that the availability of adaptive	Cross-sectional analyses of first study. Cross lagged panel analysis	ER skills and procrastination were associated and that these connections	2/*****

regulation skills reduce procrastination		emotion regulation (ER) skills prevents procrastination.	of second study. Two-arm randomized control trial (RCT) was conducted in the third study	were mediated by the ability to tolerate aversive emotions. The ability to modify aversive emotions reduced subsequent procrastination and procrastination affected the subsequent ability to tolerate aversive emotion. Systematic training of the ER skills to tolerate and modify aversive emotions reduced procrastination. Thus, in order to overcome procrastination, emotion-focused strategies should be considered	
Ozer B.U. Exploring academic procrastination among Turkish	Turkey	Examined the prevalence of and reasons for academic procrastination as a	Turkish Procrastination Assessment Scale-Students	52% of students self-reported frequent academic procrastination	4/*****

students: Possible gender differences in prevalence and reasons.		function of gender and academic grade level. Participants: Study 1 - 203 Turkish undergraduate students. Study 2 - 784 students (363 women and 421 men)		n. Males reported more frequent procrastination on academic tasks than females. Significantly more females than males reported greater academic procrastination due to fear of failure and laziness. Males reported more academic procrastination as a result of risk tasing and rebellion against control than did females	
Ferrari J. R. (1995). Methods of procrastination and their relation to self-control and self-reinforcement : an exploratory study.	United States	Participants consisted of 277 college students (205 female and 72 male) who were scored on procrastination measures through a series of questionnaires	The Decisional Procrastination Scale, The Adult Inventory of Procrastination , The Self-Control Scale, Frequency of Self-Reinforcement Scale	Despite different methods of procrastination , all forms seem to correlate with the need of immediate pleasure and the avoidance of pain.	4/*****
Glick D.M. (2013) A preliminary investigation	United States	Aimed to investigate the associations	Procrastination Assessment Scale- Students,	There are significant associations among school	4/*****

of the role of psychological inflexibility in academic procrastination		between school attachment, academic procrastination and life satisfaction and the mediating effect of academic procrastination. Participants: The mediation model was tested with 324 adolescents (53.4% female, and 46.6% male)	State-trait Anxiety Inventory-Trait, Action and acceptance Questionnaire , Academic Values Questionnaire	attachment, academic procrastination and life satisfaction. The results show that school attachment contributes to a reduction in academic procrastination and an increase in life satisfaction. In this respect, it can be said that attachment to school has a therapeutic value for students	
Häfner A. Avoiding procrastination through time management: an experimental intervention study.	Germany	Examined the effects of short term time management intervention on procrastination. Randomly assigned 96 students to a treatment and control group.		Participants of the control group showed procrastination, and participants of the treatment group allocated their work time more equally and did not show procrastination. Therefore, the explored time management intervention	2/**

				prevents from a serious time management problem	
Haghbin, M. The Complexity of the Relation between Fear of Failure and Procrastination	Canada	Investigated the indirect and conditional relation between fear of failure and procrastination based on constructs from self-determination theory. Participants: 300 university students	Used structural equation modeling to analyze data	The relation between fear of failure and procrastination was moderated by perceived competence. The relation was positively significant for students with low levels of competence and negatively significant for those with high level of competence	4/***
Chun Chu, A.H. 2005. Rethinking Procrastination: Positive Effects of "Active" Procrastination Behavior on Attitudes and Performance.	Canada	n=230 (166 women, 64 men) from 3 Canadian universities filled out a series of questionnaires. The purpose of the study was to identify a positive type of procrastinators (active procrastinators)	Quantitative descriptive study: questionnaires using a 7-point Likert-type scale. They adopted items from different scales to measure each parameter: academic procrastination, active procrastination, patterns of time use,	The authors identified two distinct groups of procrastinators: passive vs active procrastinators. Active procrastinators share a similar level of procrastination with passive procrastination however they more	4/*****

			perception of time control, self efficacy belief, motivational orientations, stress-coping strategy, stress, depression, life satisfaction, and academic performance	closely resemble non-procrastinators in terms of use of time, self efficacy belief, coping styles, academic performance and outcomes.	
Zacks, S., 2018. Academic interventions for academic procrastination: A review of the literature.	Israel	Literature review to determine the causes and consequences of procrastination as well as effective procrastination interventions	Literature review	The authors concluded that more research on effective teaching strategies and procrastination intervention is necessary. Instructional intervention tends to be effective as it helps with the failure to self-regulate in procrastinators.	1/****
Svartdal F, (2020). How Study Environments Foster Academic Procrastination: Overview and Recommendations.	Germany	Created and evaluated a group training based on a cyclical process model of self-regulated learning to reduce procrastination	Mixed Methods: Participants engaged in weekly sessions each with a specific goal (introduction, goal and time management,	Students gave the group training a good evaluations and found it would be helpful for peers suffering with procrastination	5/****

		n in students (n=106)	self-motivation, distractions and temptations, and preparation for the future). Students completed a modified 16-item Tuckman procrastination scale, subscales of the German adaptation of the motivated strategies for learning questionnaire, and a questionnaire to evaluate the training.	n	
Jackson, T. (2003). Procrastination and perceptions of past, present, and future.	N/A	Evaluated assumptions of self-regulation and specious rewards explanations of procrastination which postulate that a reduced focus on the future among procrastinators is due to their increased	Quantitative descriptive study: questionnaires	Explanations invoking failures in self-regulation or pre-occupations with specious rewards to account for procrastinators' reduced focus on setting and carrying out future goals require modification	4/*****

		<p>focus on current concerns and immediate rewards.</p> <p>Study 1 (n=1147) self-report measures of procrastination and past, present and future time perspectives.</p> <p>Study 2 (n=160) controlled for negative affect.</p>			
<p>Kandemir M. (2014)</p> <p>Reasons of academic procrastination: self-regulation, academic self-efficacy, life satisfaction and demographics variables</p>	Turkey	<p>619 from Kirikkale University took part in a survey, <one day</p>	<p>Quantitative descriptive study: questionnaires</p>	<p>Explanations invoking failures in self-regulation or pre-occupations with specious rewards to account for procrastinators' reduced focus on setting and carrying out future goals require modification</p>	4/*****
<p>Milgram, N. (1995).</p> <p>Correlates of academic procrastination: discomfort, task</p>	Israel	<p>Studied the relationships among five aspects of academic procrastination -</p>	<p>Quantitative descriptive study: Procrastination assessment scale students</p>	<p>Delay on academic tasks was affected by task aversiveness but not by</p>	4/****

aversiveness, and task capability.		behavioural delay, personal upset about the delay, task aversiveness, task capability, and the desire to reduce behavioural delay in 10-th grade Israeli students (n=195)		task capability, upset was adversely affected by low perceived-task capability and in turn increased interest in reducing delaying behaviour, and the kind of reasons given for delay had more to do with social desirability than with delay and upset patterns	
Özer B. U. 2005 Academic procrastination: Prevalence, self-reported reasons, gender difference and it's relation with academic achievement (Unpublished doctorate dissertation Unpublished master thesis). Middle East	Turkey	Purpose of the study is to examine level of academic procrastination, prevalence of procrastination in six aspects of academic work, the relationship between academic procrastination score and academic achievement, and	Quantitative descriptive study: survey and correlational study. Used Procrastination Assessment Scale-Students (PASS), Aitken Procrastination Inventory (API), Students Opinion Questionnaire	52% of METU students procrastinate on their academic tasks and the findings revealed that male students procrastinate more than female students. Students always or nearly always engage in procrastination in the area	4/*****

Technical University Ankara, Ankara		reasonings behind procrastination all in relation to gender in undergraduate students (n=784)		of studying for an exam, writing a term paper, and reading weekly reading assignments more than the other three areas: academic administrative tasks, attendance tasks and the tasks related to school activities. There is a significant negative relationship between academic procrastination and academic achievement.	
Rozental A. (2014). Understanding and treating procrastination: a review of a common self-regulatory failure.	Sweden	Literature review	Literature review explores the evidence on using cognitive behaviour therapy for procrastination, discussing scarcity of randomized controlled trials and lack of validated outcome	Different perspectives from motivational theory, learning theory, self-efficacy theory, and biases could help in designing interventions for procrastination	5/**

			measures		
Webb T., (2010). Using the internet to promote health behavior change: a systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy.	UK	Systematic review: computerized search of databases of literature between 2000 and 2008	Studies that explored interventions via the Internet with random assignment of conditions and measurement of health-related behaviors	85 studies satisfied the inclusion criteria; total sample size 43,236. Interventions had a statistically significant effect on health-related behaviour.	4/*****

***Chart continued below**

Wohl M. J. A. (2010). I forgive myself, now I can study: how self-forgiveness for procrastinating can reduce future procrastination.		University students (n=119) completed questionnaires before each of their midterms (total 2) in their introductory psychology course	Quantitative descriptive study: questionnaires measuring procrastination and self-forgiveness	Students who reported higher levels of self-forgiveness for procrastinating on studying for their first midterm showed reduced levels of procrastination for their second midterm	4/****
Aznar-Díaz, I.(2020) Mexican and Spanish	Mexico and Spain	Cross sectional study design using an	The questionnaire contained three	There were similar prevalence rates of daily	4/*****

university students' Internet addiction and academic procrastination: Correlation and potential factors.		online questionnaire to explore academic procrastination in university students (n=758)	sections: sociodemographic data, Internet Addiction Test, and Academic Procrastination Scale	internet use in both students from Mexico, Spain, and in total. Positive correlation between problematic internet use and academic procrastination.	
Balkis, M. (2012) Analysis of the relation between academic procrastination, academic rational/irrational beliefs, time preferences to study for exams, and academic achievement: a structural model.	Turkey	Questionnaires were filled out by undergraduate students (n=281) at a 7-week long summer course	Quantitative descriptive study: questionnaires measuring academic procrastination, academic rational/irrational beliefs, and time preferences to study for exams	Rational academic beliefs have a direct impact on academic procrastination and time preferences to study for exams. Academic procrastination had a direct impact on academic achievement.	4/*****
Balkis, M. Procrastination and Rational/Irrational Beliefs: A Moderated Mediation Model.	Turkey	Undergraduate students (n=293) filled out a series of questionnaires and demographic information for 20 minutes	Quantitative descriptive study: questionnaires about demographic, self-doubt, general attitude and belief, pure procrastination, and performance failure	Results show that self doubt and irrational beliefs have direct and interactive effects on fear of failure, fear of failure mediates relationship between self-	4/*****

			appraisal inventory	doubt and procrastination, rational beliefs moderated the predictive effect of fear of failure on procrastination, and the indirect effect of self-doubt on procrastination via fear may depend on the level of rational and irrational beliefs	
Bennett, C., & Bacon, A. M. (2019). At long last—A reinforcement sensitivity theory explanation of procrastination. <i>Journal of Individual Differences</i> .	England	Students (n=336) and non-students (n=187) completed a series of questionnaires to examine procrastination through the lens of reinforcement sensitivity theory	Quantitative descriptive study: questionnaires about personality, procrastination, high impulsivity and behavioural inhibition etc.	high impulsivity and high behavioural inhibition system activation were associated with reports of general procrastination. Unintentional reward reactivity was associated with unintentional procrastination in students.	4/*****
Blouin & Hudson, E. M. C. (2017). A	Canada	Undergraduate students (n=193) were	They completed pre and post-	Perceiving future self from a	2/*****

mental imagery intervention to increase future self-continuity and reduce procrastination		randomly assigned to a present-focused meditation or future-focused mental imagery condition for four weeks, twice a week.	intervention questionnaires and a half-point questionnaire.	cognitive perspective seems to be the most effective at increasing an altruistic motivation towards that self by procrastinating less in the present	
Boysan, M. (2017). Associations between procrastination, personality, perfectionism, self-esteem and locus of control.	UK	Young adults (n=242) completed questionnaires	Quantitative descriptive study: questionnaires about procrastination, perfectionism, big five personality, locus of control, and self esteem	Personality-based intervention approaches with the inclusion of family can be more influential in preventing procrastination,	4/*****
Bytamar, J. M.(2020). Emotion Regulation Difficulties and Academic Procrastination.	Iran	cross sectional study design. Students (n=250) completed the Tuckman Procrastination Scale (TPS) and Difficulties in Emotion Regulation Scale (DERS)	Quantitative descriptive study: questionnaires about procrastination and emotion regulation, depression, and anxiety	Tuckman Procrastination Scale has a significant positive association on overall Difficulties in Emotion Regulation Scale	4/*****
Eckert, M. (2018). Does sms-support	Germany	Two week internet based training	Randomized control trial: three-armed	Short internet-based intervention	2/***

make a difference? effectiveness of a two-week online-training to overcome procrastination. a randomized controlled Trial.		program (ON.TOP.) to overcome procrastination in university student (n=161)	RCT the effects of the intervention alone and intervention with daily SMS-support were compared to a waiting list control condition in a sample of students	can help students reduce procrastination. SMS support can increase efficacy of interventions	
Eisenbeck, N.(2019). From psychological distress to academic procrastination: Exploring the role of psychological inflexibility.	Spain	University students (n=429) completed a series of questionnaires	Quantitative descriptive study: questionnaires about academic procrastination, psychological inflexibility and general psychological distress (depression, anxiety, and stress)	Higher levels of procrastination were related to psychological distress and both procrastination and psychological distress were related to psychological inflexibility	4/*****
Fritzsche, B. A.(2003). Individual differences in academic procrastination tendency and writing success.	United States	University students (n=206) in writing-intensive classes completed a series of questionnaires	Quantitative descriptive study: questionnaires about procrastination, anxiety, writing-related delay behaviours and GPA	The tendency to procrastinate on writing tasks was associated with general anxiety, anxiety about writing the paper, less satisfaction with writing the paper, and	4/*****

				lower grades	
Grund, A.(2018). Understanding procrastination: A motivational approach. Personality and Individual Differences, 121, 120-130.	Germany	Three studies: Study 1 (n=223) completed questionnaires individually, study 2 (n=35) completed questionnaires for seven days in a "diary", study 3	About self-determination and dilatory about value orientations of procrastinators about ideological differences in the attribution of dilatory behaviour	Students who are seen as problematic procrastinators differ in their basic value orientation regarding achievement and well-being from those who engage less in dilatory behaviours. Levels of self determination in everyday activities are associated with momentary dilatory behaviour and trait procrastination. Strong general tendency to attribute academic procrastination to dispositional cause.	4/****
Grunschel, C.(2016) Exploring reasons and consequences of academic procrastination	Germany	Standardized interviews with university students (n=36) who either	Qualitative data: qualitative content analysis and frequency analysis	The counselling group reported more serious reasons and consequences	5/*****

n: an interview study.		belonged or did not belong to a counselling group		of academic procrastination than the non-counselling group.	
Grunschel, C (2013). Exploring different types of academic delayers: A latent profile analysis. Learning and Individual Differences, 23, 225-233.	Germany	University students (n=554) completed questionnaires and interviews	Mixed methods; Interviews were used to assess the validity of the questionnaires. Questionnaires on academic procrastination, big five personality traits, academic performance, motivation to change, and psychological strain	They revealed four distinct types of academic delayers with a thorough characterization of each type.	5/****
Grunschel, C. (2018). "I'll stop procrastinating now!" Fostering specific processes of self-regulated learning to reduce academic procrastination.	Germany	Developed and evaluated a group training to reduce academic procrastination in students (n=106). The training was made of five sessions, one 90-min session per week in groups of 10 students.	The training was evaluated using a comprehensive control group design with repeated measures	The trained intervention group significantly reduced academic procrastination and improved specific processes of self-regulated learning	3/****

Jin, H. (2019). Peer attachment and academic procrastination in Chinese college students: a moderated mediation model of future time perspective and grit.	China	Chinese college students (n=1098) filled in a series of self-report questionnaires`	Self-report questionnaires about sociodemographic, academic procrastination, peer attachment, grit, future time perspective and analytic plan	Peer attachment was negatively associated with academic procrastination, grit partially mediated association between peer attachment and academic procrastination, and future time perspective moderated the association between peer attachment and grit	4/*****
Job, V.(2015). Implicit theories about willpower predict self-regulation and grades in everyday life.	United States	University students (n=101) completed an online questionnaire once a week during the second half of a ten week term	Quantitative descriptive study: questionnaires about willpower, self-regulation failures and demands, and academic performance and workload	Better self regulation was associated with students who faced high self regulatory demands. Students taking a heavy course load with a nonlimited theory earned higher grades due to lower procrastination	4/*****
Johnson, J. L.	United States	University	Quantitative	Procrastination	4/*****

(1995). An analysis of the contribution of the five factors of personality to variance in academic procrastination.		students (n=202) completed questionnaire	descriptive study: questionnaires - NEO personality inventory and a procrastination inventory	n scores were inversely related to conscientiousness and significantly correlated with neuroticism	
Ko, C. Y. A. (2019). Investigating the relationships among resilience, social anxiety, and procrastination in a sample of college students.	Taiwan	Students (n=321) completed questionnaires with two sections: demographic details, and personal measures	The second section of the questionnaire asked about resilience, social anxiety, procrastination using different scales	Students with higher levels of resilience reported lower frequency of procrastination behaviour. Resiliency had an indirect effect on procrastination through social anxiety	4/****
Krispenz, A. (2019). How to reduce test anxiety and academic procrastination through inquiry of cognitive appraisals: A pilot study investigating the role of academic self-efficacy.	Germany	Longitudinal quasi-randomized intervention control trial on participants (n=40) who explored their worry thoughts through IBSR methods. Attended a 3-h IBSR seminar and were then given a diary	Measures were done after the 7-day period and immediately before exams. Series of questionnaires about academic self-efficacy, test anxiety, and academic procrastination	IBSR intervention reduced test anxiety and academic procrastination	2/***

		to explore worry thoughts via IBSR methods for seven days			
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***Chart continued below**

Küchler, A. M. (2019). Effectiveness of an internet-based intervention for procrastination in college students (StudiCare Procrastination): Study protocol of a randomized controlled trial.	Germany and Austria	Two armed randomized controlled trials (n=120). Intervention group will receive the e-coach guided 5-week IMI StudiCare procrastination and a waitlist control will be given an unguided IMI 12 weeks after randomization	Questionnaires are used to measure irrational procrastination, temptation, depression, anxiety, well being and self efficacy, and client satisfaction was also measured	If it proves to be effective, StudiCare Procrastination could provide a low-threshold, cost-efficient way to help the multitude of students suffering from problems caused by procrastination behavior.	2/***
Loeffler, S. N. (2019). Fostering self-regulation to overcome academic procrastination using interactive ambulatory assessment.	Germany	Mixed Methods Design: A total of 98 volunteers were randomly assigned to the IG and the CG but were not told to which group they belonged.	In phase 1 additional interactive features. Within the Morning query, the IG participants obtained a notice that a feedback link was available through the message	Most existing programs for reducing academic procrastination involve elaborate face-to-face training, and most interventions do not take place in real-life situations	2/****

		Four participants prematurely terminated the study	feature as of 7:30 a.m. The link provided individualized feedback with respect to study and procrastination behavior in tabular form presented on the smartphone display. For the Evening query, the IG was requested to provide reasons for their procrastination on the respective day.	during the preparation of academic deadlines. Whereas the contents of our interventions are similar to prior trainings, our approach accentuates the transfer of new SR strategies into daily learning routines by using intervening elements directly during preparation for academic deadlines. The individualized reason-based interventions enabled the students to reduce procrastination while increasing their completed workload and effectively using study time.	
Malouff, J. M.(2019).	Germany	Meta analysis; 12	12 randomized	Significant meta-analytic	4/*****

The Efficacy of Interventions Aimed at Reducing Procrastination: A Meta-Analysis of Randomized Controlled Trials.		studies with a total of 646 participants	controlled trials from six different countries. Meta-analytic effect, confidence intervals and homogeneity analysis were done	effect size indicates that the interventions had large positive effects. Higher effects were associated with in-person delivery of intervention, student samples, and a no treatment control	
Martinčeková, L. (2020). The effects of self-forgiveness and shame-proneness on procrastination: exploring the mediating role of affect.	Slovak Republic	University students (n=217) completed online survey which was distributed through their email addresses	Online survey asking about demographic information, procrastination, self-forgiveness for procrastination, shame-proneness and guilt proneness, and affect. Correlational analyses were done	Correlational analyses showed a positive relationship between procrastination with shame-proneness mediated through the presence of negative emotions but no relationship between procrastination with guilt proneness.	4/****
Rozental, A., Forsell, E., Svensson, A., Forsström, D.,	Sweden	Screening process recruited participants (n=710) to a	Self-report measures of procrastination, depression, anxiety, and	The results suggest there exists five separate subgroups of	4/*****

Andersson, G., & Carlbring, P. (2015). Differentiating procrastinators from each other: A cluster analysis.		randomized controlled trial of internet-based cognitive behavior therapy for procrastination	quality of life	procrastinators in terms of procrastination severity, levels of depression and anxiety, and quality of life. Tailoring intervention to the type of procrastinator through a screening process might be helpful	
Rozental, A.. (2018). Treating procrastination using cognitive behavior therapy: a pragmatic randomized controlled trial comparing treatment delivered via the internet or in groups.	Sweden	Pragmatic randomized controlled trial comparing treatment delivered during 8 weeks as self-guided CBT via the internet or group session in university students with severe procrastination (n=92)	Outcome measures related to procrastination, depression, anxiety and well being were done before and after treatment and at a 6-month follow up. Linear mixed and fixed effects models , improvement and deterioration rates were calculated	No differences between conditions were observed after the treatment period but those participating in group CBT had longer lasting benefits at follow up than internet CBT participants.	2/****
Steel, P.(2016). Academic procrastination: Psychological	Australia	University students (n=167) participating in a computerized	Big Five Inventory and short essays about reasons for procrastination	Conscientiousness and its facets were most strongly correlated with	5/*****

antecedents revisited.		introductory psychology course reported about their procrastination	n and activities pursued while procrastinating. The reasons and activities were coded according to their to the personality traits	procrastination. Other personality traits did not predict procrastination tendencies.	
Vodanovich, S. J., (1997). Relationship between time structure and procrastination.	Ireland	University students (n=115) self-reported measures during their regular class time	Self report measures using time structure questionnaire, Tuckman procrastination scale and demographic questions. Variance and regression analyses were done	Significant negative zero order correlations were found among all five subscales of time structure and procrastination. Significant multiple correlation between all five time structure subscale scores and procrastination	4/*****
Wessel, J., Bradley, G. L., & Hood, M. (2020). A low-intensity, high-frequency intervention to reduce procrastination. Applied	Australia	Randomized controlled trial University students (n=107) participated in intervention and n=315 did not. Completed	Self report measures of progress leading up to an assignment and procrastination, assignment marks etc.	Lower behavioural delay in the intervention condition compared to control condition	2/**

Psychology.		baseline questionnaire and reported their cell phone numbers. They received SMS texts twice daily for the two weeks leading up to their deadline. Each SMS included a questionnaire to indicate progress. Non-participants did not get an SMS text			
Yile, D. (2020). Characteristics and intervention of academic procrastination of students—An analysis based on 1192 effective samples of Huaqiao University.	China	University students (n=1192) self-reported procrastination measures	Quantitative descriptive study: questionnaires about academic procrastination, in assignment, exam preparation, and self learning	52.4% had academic procrastination; 44.1% had procrastination in assignment completion, 61.2% had procrastination in exam preparation, 60.8% had procrastination in self learning.	4/****

Appendix 3: Excluded Studies

<u>Year</u>	<u>Title of Excluded Study</u>
2017	The role of academic procrastination as factor of university abandonment.
1983	Procrastination: Why you do it, what to do about it.
1965	Society and adolescent self-image.
2007	“Rubicon model of action phases,”
2012	An investigation into the self-handicapping behaviors of undergraduates in terms of academic procrastination, the locus of control and academic success.
1906	Psychology: An introductory study of the structure and function of human consciousness.
2005	Psychometric properties of the Spanish version of depression, anxiety and stress scales.
1977	Self-efficacy: toward a unifying theory of behavioral change.
2005	A closer look at the relationships among trait procrastination, neuroticism, and conscientiousness. Personality and Individual Differences.
1993	A comparison of two measures of perfectionism. Personality and Individual Differences.
1965	A rationale and test for the number of factors in factor analysis. Psychometrika , v.30, p.179, 1965, Horn J. L.
1984	Academic procrastination: Frequency and cognitive-behavioral correlates.
1992	Academic procrastination: Personality correlates with Myers-Briggs types, self-efficacy, and academic locus of control.
2016	Academic procrastination: Psychological antecedents revisited. Australian Psychologist.
2017	Schemas mediate the link between procrastination and depression: Results from the United States and Pakistan.

1982	A personality profile of the college student procrastinator.
1991	The theory of planned behavior.
1969	The prediction of behavioral intentions in a choice situation.
1991	Procrastination and obedience.
2006	An investigation of the academic procrastination among university students in related to various variables.
2014	Advantages and limitations of Internet-based interventions for common mental disorders.
2006	Amos 7.0 user's guide.
1986	At last, my research article on procrastination
2020	Pathologies associated with Problematic Internet Use. A systematic review and meta-analysis in WoS and Scopus.
2006	The relationship between student teachers' procrastination behavior, decision making and thinking styles.
2013	Academic procrastination, academic life satisfaction and academic achievement: The mediation role of rational beliefs about studying.
2015	The moderator role of rational beliefs in relation to procrastination, academic achievement and academic satisfaction.
2012	The direct and indirect role of self-esteem and procrastination in the relation to fear of failure and self-worth.
2018	The protective role of rational beliefs on the relationship between irrational beliefs, emotional states of stress, depression and anxiety.
2018	Procrastination, self-downing, self-doubt, and rational beliefs: A moderated mediation model.
2018	Adolescent Internet abuse: A study on the role of attachment to parents and peers in a large community sample.

1977	Self-efficacy: toward a unifying theory of behavioral change.
2005	The primacy of self-regulation in health promotion.
2010	Psychological connectedness and intertemporal choice.
2011	On intertemporal selfishness: How the perceived instability of identity underlies impatient consumption.
1997	Perspective taking: Imagining how another feels versus imagining how you would feel.
1991	Altruism in humans.
1996	Self-regulation failure: An overview.
2007	Self-regulation and the executive function: The self as controlling agent.
1996	Manual for the beck depression inventory-II.
2000	Correlates and consequences of behavioral procrastination: the effects of academic procrastination, self-consciousness, self-esteem and self-handicapping (special issue).
2014	Affect Regulation Training (ART).
2012	Emotion regulation and mental health: recent findings, current challenges, and future directions.
1990	Validation of General Attitude and Belief Scale.
1995	A rational-emotive mental training program for professional athletes.
2011	Rationality and the pursuit of happiness.
2015	Psychometric properties of the cognitive emotion regulation questionnaire in a sample of iranian population.
1988	Psychological antecedents of student procrastination.

2016	Procrastination, Distress and Life Satisfaction across the Age Range - A German Representative Community Study
2013	Big five personality traits as a predictor of general and academic procrastination behaviours among adolescents.
2008	Autobiographical memory in childhood and the development of a continuous self.
2001	Imagining stereotypes away: The moderation of implicit stereotypes through mental imagery.
1967	Punctual and procrastinating students: A study of temporal parameters.
2015	Experiencing the temporally extended self: Initial support for the role of affective states, vivid mental imagery, and future self continuity in the prediction of academic procrastination.
2000	Task aversiveness and procrastination: a multi-dimensional approach to task aversiveness across stages of personal projects.
1989	Procrastination, busyness and bingeing.
2018	The relationships between problematic internet use, alexithymia levels and attachment characteristics in a sample of adolescents in a high school, Turkey.
1993	Testing structural equation models.
1997	Academic procrastination and irrational thinking: a reexamination with context controlled.
1991	Helping students confront and deal with stress and procrastination.
2009	When will I succeed in my first-year diploma? Survival analysis in Dutch higher education.
1983	Procrastination: why you do it and what to do about it.
2005	The rational imagination: How people create alternatives to reality.
2003	Lise ve üniversite öğrencilerinde genel erteleme ve akademik erteleme davranışının incelenmesi.

2006	Effects of dynamic and static imagery on vividness of imagery, skiing performance, and confidence.
2003	Cognitive flexibility and adaptability to environmental changes in dynamic complex problem-solving tasks.
2015	Internet addiction in university medical students.
2018	Problematic Use of the Internet and Smartphones in University Students: 2006–2017.
2006	Mindfulness and self-acceptance.
2010	Rational and irrational beliefs in primary prevention and mental health.
2018	Social anxiety, Internet and Cibersex addiction: its relationship with health perception.
2019	A latent profile approach for the study of internet gaming disorder, social media addiction, and psychopathology in a normative sample of adolescents.
2009	Eğitim fakültesi öğrencilerinin akademik erteleme davranışlarına ilişkin görüşlerinin incelenmesi.
2010	Individual differences in undergraduate student athletes: the roles of perfectionism and trait anxiety on perception of procrastination behavior.
1987	Form, effect size, and power in moderated regression analysis.
2008	Factor structure for Young's Internet Addiction Test: A confirmatory study.
1990	The essentials of factor analysis (2nd ed.).
2010	Internet addiction: a 21st century epidemic?
2009	Adherence in internet interventions for anxiety and depression.
1997	Reinterpreting the empathy–altruism relationship: When one into one equals oneness.

2018	A longitudinal study for the empirical validation of an etiopathogenetic model of internet addiction in adolescence based on early emotion regulation.
2018	Relations between student procrastination and teaching styles: autonomy-supportive and controlling.
1988	Statistical power analysis for the behavioral sciences (2nd ed.).
2008	Reading ability as a predictor of academic procrastination among African American graduate students.
2019	<u>Procrastination and Rational/Irrational Beliefs: A Moderated Mediation Model</u>
1992	Components of perfectionism and procrastination.
2002	Multidimensional fear of failure measurement: The performance failure appraisal inventory.
2008	Reinforcement sensitivity theory (RST): Introduction.
2013	Approach and avoidance behavior: Multiple systems and their interactions.
2016	<u>Reinforcement sensitivity theory of personality questionnaires: Structural survey with recommendations.</u>
2016	The reinforcement sensitivity theory of personality questionnaire (RST-PQ): Development and validation.
1993	Correlates of academic procrastination.
2014	Trait approach motivation moderates the aftereffects of self-control.
2014	Trait approach motivation moderates the aftereffects of self-control.
2011	Online interventions for social marketing health behavior change campaigns: a meta-analysis of psychological architectures and adherence factors.
1986	Self esteem in adolescents (Unpublished doctoral dissertation).
2010	Self comes to mind: Constructing the conscious brain.

1999	The feeling of what happens: Body and emotion in the making of consciousness.
2010	The role of rational and irrational beliefs in human functioning and disturbances: Implications for research, theory, and clinical practice.
1980	A multidimensional approach to individual differences in empathy.
1983	Measuring individual differences in empathy: Evidence for a multidimensional approach.
2000	Patterns of academic procrastination.
1997	Convergent and divergent validity of the beck anxiety inventory for patients with panic disorder and agoraphobia.
2013	Experiential avoidance and emotion regulation difficulties in hoarding disorder.
2004	The functional architecture of human empathy.
1977	Decision making: A psychological analysis of conflict, choice, and commitment.
1989	Decisional procrastination: Examining personality correlates.
2007	Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis.
2009	Determining the variables which explain the behavior of academic procrastination in university students.
2002	Procrastination, temptations, and incentives: the struggle between the present and the future in procrastinators and the punctual.
2018	Problematic Internet use, maladaptive future time perspective and school context.
2002	Family Environment Variables Related to the Development of Failure-Avoidant Patterns.
2018	Mobile in Spain and in World 2018.

1998	Do it now! Break the procrastination habit.
2012	Does locus of control task interest have an effect on procrastination?.
2012	Dealing with procrastination: The REBT approach and a demonstration session.
2008	The fundamental of rational emotive behavior therapy.
2004	Rational emotive behavioral counselling in action.
2006	Historical aspects of mindfulness and self-acceptance in psychotherapy.
2014	The roles of academic procrastination tendency on the relationships among self-doubt, self-esteem, and academic achievement.
1994	Dysfunctional procrastination and its relationship with self-esteem, interpersonal dependency, and self-defeating behaviors.
2014	Efficacy and cost-effectiveness of minimal guided and unguided internet-based mobile supported stress-management in employees with occupational stress: a three-armed randomised controlled trial.
2016	Overcome procrastination: enhancing emotion regulation skills reduce procrastination.
2015	Teachers' emotion regulation skills facilitate implementation of health-related intentions.
2007	The academic irrational beliefs scale: development, validation, and implications for college counselors.
1977	Overcoming Procrastination.
1962	Reason and emotion in psychotherapy.
2003	Discomfort anxiety: A new cognitive-behavioral construct (Part I).
1997	The practice of rational emotive behavior therapy (2nd ed.).
1997	Overcoming procrastination

1997	Overcoming procrastination.
2009	Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving.
2009	Saving for the future self: Neural measures of future self-continuity predict temporal discounting.
1993	Frontal lobe and frontal-striatal substrates for different forms of human cognitive flexibility.
1985	A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis.
2004	Maternal personality characteristics, affective state, and psychopathology in relation to children's attention deficit and hyperactivity disorder and comorbid symptoms (Unpublished master dissertation).
1997	Explaining lower-order traits through higher-order factors: The case of trait procrastination, conscientiousness, and the specificity dilemma.
2000	Procrastination: a means of avoiding shame or guilt?
2000	Procrastination: A means of avoiding shame and guilt?
1997	The double-edged sword of self-handicapping: Discounting, augmentation, and the protection and enhancement of self-esteem.
2015	Problematic internet use in university students: associated factors and differences of gender.
2016	The contribution of metacognitions and attentional control to decisional procrastination.
2008	Metacognitions about procrastination: A preliminary investigation.
2017	The Unintentional Procrastination Scale.
2009	Life regrets by avoidant and arousal procrastinators. Why put off today what you will regret tomorrow?

2007	Procrastination: different time orientations reflect different motives.
2000	Examining behavioral processes in indecision: decisional procrastination and decision-making style
1995	Procrastination and Task Avoidance: Theory, Research, and Treatment.
1995	Procrastination and Task Avoidance: Theory, Research, and Treatment.
1994	Dysfunctional procrastination and its relationship with self-esteem, interpersonal dependency, and self-defeating behaviors.
2000	Procrastination and attention: Factor analysis of attention deficit, boredomness, intelligence, self-esteem, and task delay frequencies.
2007	Perceptions of self-concept and self-presentation by procrastinators: Further evidence.
1994	Procrastination as revenge: do people report using delays as a strategy for vengeance?
1997	Exploring the time preferences of procrastinators: night or day, which is the one?
1995	Procrastination and task avoidance: Theory, research, and treatment.
2007	Procrastination: Different time orientations reflect different motives.
1995	Procrastination and task avoidance: theory, research, and treatment.
2009	Behavior change interventions delivered by mobile telephone short-message service.
1995	Procrastination, negative self-judgments, and stress in depression and anxiety: A review and preliminary model.
1992	Components of perfectionism and procrastination in college students.
2012	Procrastination automatic thoughts as a personality construct: An analysis of the procrastinatory cognitions inventory.

1995	Procrastination, negative self-evaluation, and stress in depression and anxiety: A review and preliminary model.
2014	Construct validity and factor structure of the difficulties in emotion regulation scale among adults with severe mental illness.
1966	Compliance without pressure: the foot-in-the-door technique.
2003	Individual differences in academic procrastination tendency and writing success.
2005	A Brief Introduction to Rational Emotive Behaviour Therapy (3rd Ed.)
2010	Time management: Procrastination tendency in individual and collaborative tasks.
2018	Pilot study of a web-based acceptance and commitment therapy intervention for university students to reduce academic procrastination.
2016	Adicción a internet en jóvenes y adultos pertenecientes a la Universidad Nacional Autónoma de México.
2018	Internet addiction and procrastination among Chinese young adults: A moderated mediation model.
2005	Psychometric properties of a Persian-language version of the beck depression inventory-second edition: BDI-II-PERSIAN.
2012	Cultural adaptation of the difficulties in emotion regulation scale: reliability and validity of an Italian version.
2015	An investigation of the efficacy of acceptance-based behavioral therapy for academic procrastination.
2009	Behavioral self-regulation for weight loss in young adults: a randomized controlled trial.
1995	Internet addictive disorder (IAD) diagnostic criteria.
2018	The relationship between academic procrastination and metacognitive beliefs: [in persian].

1999	Implementation intentions: Strong effects of simple plans.
2006	Implementation intentions and goal achievement: a meta-analysis of effects and processes.
1999	Implementation intentions: Strong effects of simple plans.
2013	The effect of the foot-in-the-door technique on sales in a computer-mediated field setting.
2004	Multidimensional assessment of emotion regulation and dysregulation: development, factor structure, and initial validation of the difficulties in emotion regulation scale.
2000	The neuropsychology of anxiety: An enquiry into the functions of the Septo-hippocampal System (2nd ed.).
1984	A cognitive-behavioral assessment of problematic academic procrastination: development of a procrastination self-statement inventory.
1980	The totalitarian ego: Fabrication and revision of personal history.
1986	Modeling and mental imagery use by multiply handicapped and learning disabled preschool children.
2015	Handbook of Emotion Regulation, 2nd Edn.
2002	Foot-in-the-door technique and computer mediated communication.
1999	Sequential request strategy: effect on donor generosity.
2008	Foot-in-the-door technique using a courtship request: a field experiment.
2014	Genetic relations among procrastination, impulsivity, and goal management ability: Implications for the evolutionary origin of procrastination.
2015	Conceptualization and operationalization of delay: Development and validation of the multifaceted measure of academic procrastination and the delay questionnaire (doctoral dissertation).

2012	The complexity of the relation between fear of failure and procrastination.
2018	Psychometric properties of the difficulties in emotion regulation scale (DERS) and its short forms in adults with emotional disorders.
2005	It's too difficult! Frustration intolerance beliefs and procrastination.
1996	Prevalence of procrastination among samples of adults.
1996	Distractibility, daydreaming, and self-critical cognitions as determinants of indecision.
1996	Prevalence of procrastination among samples of adults.
1998	Procrastination in college students: the role of self efficacy and anxiety.
2013	Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.
2014	Statistical mediation analysis with a multicategorical independent variable.
1987	Thought contents and cognitive functioning in motivational vs. volitional states of mind.
2011	Short horizons and tempting situations: Lack of continuity to our future selves leads to unethical decision making and behavior.
2011	Increasing saving behavior through age-progressed renderings of the future self.
2018	The efficacy of group acceptance and commitment therapy on reducing academic procrastination and improving difficulty in emotion regulation: a randomized clinical trial.
2013	Prokrastination: Ein Manual zur Behandlung des Pathologischen Aufschiebens.
2010	Mental imagery in emotion and emotional disorders.
2008	Looking at or through rose-tinted glasses? Imagery perspective and positive mood.

2006	Positive interpretation training: Effects of mental imagery versus verbal training on positive mood.
2006	Academic procrastination. The pattern and correlates of behavioral postponement.
2007	Procrastination: associations with achievement goal orientation and learning strategies. B211
2005	The relationship of motivation and flow experience to academic procrastination in university students
2006	[The relationship study on the relationship between procrastination behaviors and bad personality disposition]
2008	College students who have an eveningness preference report lower self-control and greater procrastination
2012	Cognitive behavior therapy via the Internet: a systematic review of applications, clinical efficacy and cost-effectiveness
2013	Relationship between procrastination and academic performance among a group of undergraduate dental students in India
2014	Internet-based cognitive behavioral therapy for patients with chronic somatic conditions: a meta-analytic review
2014	Traumatized refugees: morbidity, treatment and predictors of outcome
2014	Psychometric evaluation of the Swedish version of the pure procrastination scale, the irrational procrastination scale, and the susceptibility to temptation scale in a clinical population
2015	Internet-based cognitive-behavior therapy for procrastination: A randomized controlled trial
2016	Internet-based cognitive-behavior therapy for procrastination: A randomized controlled trial
2015	Internet-vs. group-delivered cognitive behavior therapy for insomnia: A randomized controlled non-inferiority trial

2017	Overcoming procrastination: one-year follow-up and predictors of change in a randomized controlled trial of Internet-based cognitive behavior therapy
2016	Prevalence of problematic internet use in Slovenia
2017	A Brazilian Investigation of the 36- and 16-Item Difficulties in Emotion Regulation Scales
2018	Academic interventions for academic procrastination: A review of the literature
2018	Academic interventions for academic procrastination: A review of the literature
2018	Academic interventions for academic procrastination: A review of the literature
2018	Academic interventions for academic procrastination: A review of the literature
2018	Roles of Impulsivity, Motivation, and Emotion Regulation in Procrastination - Path Analysis and Comparison Between Students and Non-students
2018	Hoarding Disorder and Difficulties in Emotion Regulation
2020	Contributions of Positive Psychology in Self-Regulated Learning: A Study With Brazilian Undergraduate Students
2020	Academic procrastination in nursing students. Spanish adaptation of the Academic Procrastination Scale-Short Form (APS-SF)
2020	Mexican and Spanish university students' Internet addiction and academic procrastination: Correlation and potential factors
2020	State and Trait Anxiety Among University Students: A Moderated Mediation Model of Negative Affectivity, Alexithymia, and Housing Conditions
2020	Uncovering the Moderating Role of Grit and Gender in the Association between Teacher Autonomy Support and Social Competence among Chinese Undergraduate Students
2021	How individuals make choices explains addiction's distinctive, non-eliminable features

2020	A Structural Equation Model of Perceived Autonomy Support and Growth Mindset in Undergraduate Students: The Mediating Role of Sense of Coherence
2020	Parental Attachment and Problematic Internet Use among Chinese Adolescents: The Moderating Role of Gender and Grit
2021	COVID-19 Infection Risk and Depressive Symptoms Among Young Adults During Quarantine: The Moderating Role of Grit and Social Support
2018	Does SMS-Support Make a Difference? Effectiveness of a Two-Week Online-Training to Overcome Procrastination. A Randomized Controlled Trial
2018	Efficacy of a guided internet-based intervention (iSOMA) for somatic symptoms and related distress in university students: study protocol of a randomised controlled trial
2019	Effectiveness of an internet-based intervention for procrastination in college students (StudiCare Procrastination): Study protocol of a randomized controlled trial
2014	Absorbed in the moment? An investigation of procrastination, absorption and cognitive failures
2015	The mystery of “should”: Procrastination, delay, and reactance in academic settings
2015	Cognitive, emotional, and motivational factors related to procrastination: A cluster analytic approach
2016	Procrastination as a self-regulation failure: The role of inhibition, negative affect, and gender□
2018	Association between a functional polymorphism on the dopamine-β-hydroxylase gene and reward dependence in two independent samples
2018	Top-down or bottom-up? Prospective relations between general and domain-specific self-efficacy beliefs during a work-family transition□
2018	Individual differences in the effects of baby images on attitudes toward getting married

2018	Backward and forward serial recall across modalities: An individual differences perspective
2016	Problematic Facebook use and procrastination
2016	Procrastination and self-efficacy: Tracing vicious and virtuous circles in self-regulated learning
2011	Comparing active delay and procrastination from a self-regulated learning perspective
2013	Children's additive concepts: Promoting understanding and the role of inhibition
2013	Motivated or paralyzed? Individuals' beliefs about intelligence influence performance outcome of expecting rapid feedback
2013	Considering word characteristics for spelling accuracy: Evidence from Korean-speaking children
2013	The role of lexical representations and phonological overlap in rhyme judgments of beginning, intermediate and advanced readers
2013	The role of explicit need strength for emotions during learning
2013	Extending antecedents of achievement goals: The double-edged sword effect of social-oriented achievement motive and gender differences
2014	Reconsidering active procrastination: Relations to motivation and achievement in college anatomy
2019	Emergency department ergonomic design evaluation: A case study using fuzzy DEMATEL-focused two-stage methodology
2019	Biases and imperatives in handling medical technology
2014	A preliminary investigation of the role of psychological inflexibility in academic procrastination
2016	Psychometric properties of the Avoidance and Fusion Questionnaire for Youth: A psychological measure of psychological inflexibility in youth

2019	Assessing psychological inflexibility in university students: Development and validation of the acceptance and action questionnaire for university students (AAQ-US)
2019	The role of present moment awareness and cognitive fusion with food craving in the relationship between depression and binge eating
2019	Treatment sensitivity: Its importance in the measurement of psychological flexibility
2019	A Service Member's experience of Acceptance and Commitment Therapy for Moral Injury (ACT-MI) via telehealth: "Learning to accept my pain and injury by reconnecting with my values and starting to live a meaningful life"
2006	Internet-based exercise intervention systems: Are more interactive designs better?
2014	The organization of irrational beliefs in posttraumatic stress symptomology: Testing the predictions of REBT theory using structural equation modelling.
1997	Empathic accuracy.
2017	Predictive Roles of Depression and Demographic Factors in Internet Addiction: A Cross-Sectional Study of Students in a Nigerian University.
2001	The impact of hope, procrastination and social activity on academic performance of Midwestern college students.
1085	Psychology: The briefer course.
2013	Potentiating empathic growth: Generating imagery while reading fiction increases empathy and prosocial behavior.
1995	An analysis of the contribution of the five factors of personality to variance in academic procrastination.
1995	An analysis of the contribution of the five factors of personality to variance in academic procrastination.
1994	Wherever you go, there you are: Mindfulness meditation in everyday life.

2016	Pathological internet use is on the rise among european adolescents.
1979	Intuitive prediction: biases and corrective procedures.
2015	A randomized controlled behavioral intervention trial to improve medication adherence in adult stroke patients with prescription tailored Short Messaging Service (SMS)-SMS4Stroke study.
1998	Internet addiction on campus: The vulnerability of college students.
2012	Adaptive persuasive systems: a study of tailored persuasive text messages to reduce snacking.
2004	Tax Procrastination: Survey Finds 29% have yet to begin Taxes.
1983	What does it mean to be a high imager?
2011	Enhanced active choice: a new method to motivate behavior change.
2019	Reductions in transdiagnostic factors as the potential mechanisms of change in treatment outcomes in the unified protocol: a randomized clinical trial.
2012	Common and distinct neural mechanisms of attentional switching and response conflict.
2015	The relationship between procrastination and academic performance: A meta-analysis.
2006	The dark side of internet: Preliminary evidence for the associations of dark personality traits with specific online activities and problematic internet use.
2012	The relationship between locus of control and perfectionism perception of the primary school administrators (Unpublished doctorate dissertation).
2008	Academic procrastination of undergraduates: low self-efficacy to self-regulate predicts higher levels of procrastination.
2008	Academic procrastination of undergraduates: low self-efficacy to self-regulate predicts higher levels of procrastination.
2009	Academic procrastination and motivation of adolescents in Turkey.

2008	<u>Academic procrastination of undergraduates: Low self-efficacy to selfregulate predicts higher levels of procrastination.</u>
2008	Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination.
2005	Principles and practice of structural equation modeling (2nd ed.).
2005	Psychological testing: A practical approach to design and evaluation.
2013	Procrastination. When good things don't come to those who wait.
2012	Procrastination: development and validation of a German short scale of the general procrastination scale.
2013	Why students procrastinate: a qualitative approach.
2013	When good things don't come to those who wait.
2006	Frustration tolerance training for children.
2009	The psychology of emotion regulation: an integrative review.
2008	Effectiveness of mobile-phone short message service (SMS) reminders for ophthalmology outpatient appointments: observational study.
2001	Neural foundations of imagery.
2010	The future of emotion research in the study of psychopathology.
2009	Healthcare via cell phones: a systematic review.
2002	Imagery techniques in the work of Mike and Nancy Samuels.
1986	At last, my research article on procrastination.
1993	Trait procrastination, time management, and academic behavior.
1986	At last, my research article on procrastination.

1986	<u>At last, my research article on procrastination.</u>
1997	Conscientiousness, procrastination, and person–task characteristics in job searching by unemployed adults.
1991	Intentions and behavior in studying for an examination: the role of trait procrastination and its interaction with optimism.
1993	Trait procrastination, time management, and academic behavior.
2005	<u>The relationship of motivation and fow experience to academic procrastination in university students.</u>
2016	Addictive online games: Examining the relationship between game genres and internet gaming disorder.
2015	When does the future begin? Time metrics matter, connecting present and future selves.
2011	Visual perspective in mental imagery: A representational tool that functions in judgment, emotion, and self□insight.
2003	Is attention to feelings beneficial or detrimental to affective well-being?
2020	Academic self-efficacy and postgraduate procrastination: a moderated mediation model.
2013	Using mental imagery to deliver self□regulation techniques to improve sleep behaviors.
2016	Traits associated with internet addiction in young adults: Potential risk factors.
2008	Phantom limb pain, cortical reorganization and the therapeutic effect of mental imagery.
2011	Cortical reorganization, mental imagery and pain.
2012	Trait procrastination among dental students in India and its influence on academic performance.

2019	Problematic internet use in Bangladeshi students: The role of sociodemographic factors, depression, anxiety, and stress.
1970	Measures of multivariate skewness and kurtosis with applications.
1973	Visual imagery differences in the recall of pictures.
1987	Resolving the unvividness paradox.
2003	Self-handicapping and defensive pessimism: A model of self-protection from a longitudinal perspective.
2015	Abaris Financial and the revolution in retirement spending.
2011	Finally, my thesis on academic procrastination (Master's thesis).
2015	<u>Finally! The development and validation of the Academic Procrastination Scale.</u>
2012	Content analyses of the beliefs of academic procrastinators.
1995	The VVIQ as a psychometric test of individual differences in visual imagery vividness: A critical quantitative review and plea for direction.
2007	Delineating components of emotion and its dysregulation in anxiety and mood psychopathology.
2006	Effects of guided imagery on outcomes of pain, functional status, and self-efficacy in persons diagnosed with fibromyalgia.
2019	Mexican Internet Association. 15°study on the habits of internet users in Mexico 2018.
1999	Academic anxiety, academic procrastination, and parental involvement in students and their parents.
2018	Action plan on addictions 2018–2020.
2014	The role of positive and negative perfectionism, self-efficacy, worry and emotion regulation in predicting behavioral and decisional procrastination.

2017	Comparison of anxiety and depression among students with and without academic procrastination.
2018	Prevalence of academic procrastination and its association with metacognitive beliefs in Zanjan University of medical sciences.
2009	Meditation, mindfulness and cognitive flexibility.
2013	Imagination and the self.
2007	The role of irrational beliefs and aggression on academic performance of grade male students in Tabriz high schools.
2016	Procrastination, distress and life satisfaction across the age range: A German representative community study.
1994	Psychological reactance and brief treatment of academic procrastination.
1973	Multidimensional locus of control in psychiatric patients.
2014	Exploring internet addiction, academic procrastination and general procrastination among pre-service ICT teachers.
2017	The structure of common emotion regulation strategies: a meta-analytic examination.
2012	Analysis of gender differences in degree choice.
2012	Mental practice is modifiable: Changes in perspective maintenance and vividness post-stroke.
1999	Incentives for procrastinators.
2001	Choice and procrastination.
2000	Subjective overachievement: Individual differences in self-doubt and concern with performance.
2001	On the social nature of personality: Effects of extraversion, agreeableness, and feedback about collective resource use on cooperation in a resource dilemma.

2000	Academic procrastinators and perfectionistic tendencies among graduate students.
1998	The causes and consequences of academic procrastination: A research note.
2017	Factor structure of the difficulties in emotion regulation scale (DERS) in adult outpatients receiving dialectical behavior therapy (DBT).
1977	Overcoming procrastination.
2008	Overcoming procrastination: the effect of implementation intentions.
1997	Procrastination in high school achievement: a causal structural model.
2011	Üniversite öğrencilerinin akademik erteleme nedenler [The reasons for academic procrastination among university students].
2009	Exploring academic procrastination among Turkish students: Possible gender differences in prevalence and reasons.
2009	Exploring academic procrastination among Turkish students: Possible gender differences in prevalence and reasons.
2009	Exploring academic procrastination among Turkish students: possible gender differences in prevalence and reasons.
1994	Parental authority and the development of female dysfunctional procrastination.
1971	Personal identity.
1987	Reasons and persons.
2016	Addiction and factors of Internet misuse, in a sample of university students.
2012	Academic procrastination: the perspective of university counsellors.
2007	<u>Fear and anxiety as separable emotions: An investigation of the revised reinforcement sensitivity theory of personality.</u>

1996	Personality correlates of depression and health symptoms: A test of a self-regulation model.
2005	Personality in adulthood: A five-factor theory perspective.
2009	How do emotion and motivation direct executive control?
2017	Mobile abuse in university students and profiles of victimization and aggression.
2007	Self-criticism, goal motivation, and goal progress.
2011	Effect size measures for mediation models: Quantitative strategies for communicating indirect effects.
2014	Predictability of personality traits on the procrastination behaviour.
2009	Prevalence of academic procrastination behavior among pre-service teachers, and its relationships with demographics and individual preferences.
1996	Prevalence of procrastination among samples of adults.
1995	Procrastination and task avoidance: Theory, research, and treatment.
1998	Procrastination in college students: The role of self-efficacy and anxiety.
2013	Procrastination in different life-domains: Is procrastination domain specific?.
2013	Procrastination when good things don't come to those who wait.
1992	Procrastinators and perfect behavior: An exploratory factor analysis of self-presentation, self-awareness, and self-handicapping components.
2011	Psychometric properties of the Turkish version of the Frost Multidimensional Perfectionism Scale.
2013	Problematic Internet use in a sample of Colombian university students.
2000	Putting off until tomorrow what is better done today: Academic procrastination as a function of motivation toward college work.

2012	Procrastination and self-regulatory failure: an introduction to the special issue.
2000	Five days of emotion: an experience sampling study of undergraduate student procrastination.
2016	Procrastination, emotion regulation, and well-being
2002	Parenting and procrastination: Gender differences in the relations between procrastination, parenting style and self-worth in early adolescence.
2000	Five days of emotion: An experience sampling study of undergraduate student procrastination.
2004	A project□analytic perspective on academic procrastination and intervention.
2013	An investigation into the reliability and validity of beck anxiety inventory among the university students.
2014	Reasons of academic procrastination: Self-regulation, academic self-efficacy, life satisfaction and demographics variables.
2018	Procrastination as a self-regulation failure: the role of impulsivity and intrusive thoughts.
2015	Cognitive, emotional, and motivational factors related to procrastination: a cluster analytic approach.
2012	Computer-based psychological treatments for depression: a systematic review and meta-analysis.
2005	A systematic review of guided imagery as an adjuvant cancer therapy.
2003	Role conflict and academic procrastination: A self□determination perspective.
2019	Analysis of smartphone addiction in university students.
1983	“Deep” RET: A reformulation of some psychodynamic explanations of procrastination.
2018	The internet addiction test in a young adult U.S. population.

1986	Affective, cognitive and behavioral differences between high and low procrastinators.
1986	Affective, cognitive, and behavioral differences between high and low procrastinators.
2013	Internet-based cognitive behavior therapy for procrastination: study protocol for a randomized controlled trial.
2014	Understanding and treating procrastination: a review of a common self-regulatory failure.
2015	Internet-based cognitive- behavior therapy for procrastination: a randomized controlled trial.
2014	Group versus internet-based cognitive-behavioral therapy for procrastination: study protocol for a randomized controlled trial.
2018	Social media use in lectures mediates the relationship between procrastination and problematic smartphone use.
2010	Structural equation models.
2019	Future teachers' smartphone uses and dependence.
2017	Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness.
1999	Predictors of academic procrastination in college students.
2016	Relationships among smartphone addiction, stress, academic performance, and satisfaction with life.
2008	Self continuity: Individual and collective perspectives.
1996	Irrational beliefs that can lead to academic failure for African American middle school students who are academically at-risk.
2002	Missing data: our view of the state of the art.
2006	Schema therapy: A practitioner's guide.

2006	New perspectives for the evaluation of training sessions in self-regulated learning: time-series analyses of diary data.
1995	Academic procrastination: Theoretical notions, measurement, and research.
2004	"Procrastination in academic settings: general introduction" in Counseling the Procrastinator in Academic Settings
2001	Study motivation under social temptation; effects of trait procrastination.
1995	Trait procrastination and the big five factors of personality.
1995	Trait procrastination and the big-five factors of personality.
2008	Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors.
1991	Self-handicapping by procrastinators: Protecting self-esteem, social-esteem, or both.
1995	Self-regulation and academic procrastination.
2003	Role conflict and academic procrastination: a self-determination perspective.
1995	Self-regulation and academic procrastination.
1995	Self-regulation and academic procrastination.
2009	Cognitive-behavioral therapy of delusions: Mental imagery within a goal directed framework.
2017	Assessing the psychometric properties of the Internet Addiction Test: A study on a sample of Italian university students.
2002	Intention-behavior relations: a conceptual and empirical review.
2006	Prevalence of procrastination and the effects of cognitive-behavior and behavior management therapies on reduction of procrastination in male & female high school students in Ahvaz.

1984	Imagery, physiology, and psychosomatic illness.
2015	Resilience and decision-making strategies as predictors of career decision difficulties.
1981	Procrastinating.
2001	New perspectives on autobiographical memory: The integration of narrative processing and autobiographical reasoning.
2004	Procrastination and intentions to perform health behaviors: the role of self-efficacy and the consideration of future consequences.
2014	Out of sight, out of time? A meta-analytic investigation of procrastination and time perspective.
2014	Procrastination and stress: exploring the role of self-compassion.
2003	“I’ll look after my health, later”: an investigation of procrastination and health.
2013	Procrastination and the priority of short-term mood regulation: consequences for future self.
2013	Procrastination and the priority of short-term mood regulation: consequences for future self.
2015	Is procrastination a vulnerability factor for hypertension and cardiovascular disease? Testing an extension of the procrastination–health model.
2014	Out of sight, out of time? A meta-analytic investigation of procrastination and time perspective.
2013	Procrastination and the priority of short-term mood regulation: Consequences for future self.
2012	Lost in the moment? An investigation of procrastination, mindfulness, and well-being.
2003	“I’ll look after my health, later”: An investigation of procrastination and health.

1991	Imagery in sport: An historical and current overview.
2005	Action planning and coping planning for long-term lifestyle change: theory and assessment.
1984	Academic procrastination: frequency and cognitive-behavioral correlates.
1984	Academic procrastination: frequency and cognitive-behavioral correlates.
1984	Academic procrastination: frequency and cognitive-behavioral correlates.
1984	<u>Academic procrastination: Frequency and cognitive-behavioral correlates.</u>
2000	Time orientations of procrastinators: Focusing on the past, present, or future?
2012	Crossmodal mental imagery.
2018	Measurement invariance of the internet gaming disorder scale–short-form (IGDS9-SF) between Australia, the USA, and the UK.
2010	“I’ll go to therapy, eventually”: procrastination, stress and mental health.
2007	The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure.
2007	The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure.
2007	Procrastination and performance.
2010	The Procrastination Equation: How to Stop Putting Things off and Start Getting Stuff Done.
2007	The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure.
2001	Procrastination and personality, performance, and mood.
2016	Academic procrastination: psychological antecedents revisited.

2006	Integrating theories of motivation.
2007	The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure.
2007	<u>The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure.</u>
2007	The nature of procrastination: a meta-analytic and theoretical review of quintessential self regulatory failure.
2010	Arousal, avoidant and decisional procrastinators: Do they exist?
2010	The procrastination equation: How to stop putting things off and start getting stuff done.
2018	Examining procrastination across multiple goal stages: A longitudinal study of temporal motivation theory.
2001	Worry, procrastination, and perfectionism: Differentiating amount of worry, pathological worry, anxiety, and depression.
2015	Intervening to enhance proactivity in organizations: Improving the present or changing the future.
2013	Development and validation of a 2×2 model of time-related academic behavior: procrastination and timely engagement.
2000	Subjective overachievement: Individual differences in self-doubt and concern with performance.
2010	Correlates and phenomenology of first and third person memories.
2006	Using multivariate statistics.
2000	Task aversiveness and procrastination: A multi-dimensional approach to task aversiveness across stages of personal projects.
2018	Prevalence rate of Internet addiction among Japanese college students: Two cross-sectional studies and reconsideration of cut-off points of Young's Internet Addiction Test in Japan.

1999	The Big Five trait taxonomy: History, measurement, and theoretical perspectives.
1990	The dimensions of perfectionism. Cognitive Therapy and Research.
1997	The dispositional causes of job satisfaction: A core evaluations approach.
1999	The effects of locus of control and task difficulty on procrastination.
2007	The evaluation of the major characteristics and aspects of the procrastination in the framework of psychological counseling and guidance.
2007	The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure.
2010	The role of general and performance self esteem in relation academic procrastination and academic achievement.
2014	The roles of academic procrastination tendency on the relationships among self doubt, self esteem and academic achievement.
2009	The social construction of self-esteem, Oxford handbook of positive psychology.
2016	The unintentional procrastination scale.
2019	Comparison of internet addiction between teenagers and young adults.
2005	Dispositional forgiveness of self, others, and situations.
1997	Longitudinal study of procrastination, performance, stress, and health: the costs and benefits of dawdling.
2000	Giving in to feel good: the place of emotion regulation in the context of general self-control.
2001	Emotional distress regulation takes precedence over impulse control: If you feel bad, do it!
1997	Longitudinal study of procrastination, performance, stress, and health: the costs and benefits of dawdling.

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2001	Emotional distress regulation takes precedence over impulse control: If you feel bad, do it!
1995	Trait procrastination and the big-five factors of personality. Personality and Individual Differences.
1991	The development and concurrent validity of the procrastination scale.
1991	The development and concurrent validity of the procrastination scale.
1999	Underachieving to protect self-worth: Theory, research, and interventions.
1996	Patient non-compliance with drug regimens: measurement, clinical correlates, economic impact.
2019	Use and abuse of social media by adolescents: a study in Mexico.
2014	Habitus and flow in primary school musical practice: relations between family musical cultural capital, optimal experience and music participation.
2020	Young university students' academic self-regulation profiles and their associated procrastination: autonomous functioning requires self-regulated operations.
2012	<u>For fun, love, or money: What drives workaholic, engaged, and burned-out employees at work?</u>
2005	Empathy gaps in emotional perspective taking.
2000	Procrastination: self-regulation in initiating aversive goals.
2003	A meta-analytically derived nomological network of procrastination.
2003	A meta-analytically derived nomological network of procrastination.

2005	Bridging the gap between intentions and behavior: implementation intentions, action control, and procrastination.
2007	Seeing future success: Does imagery perspective influence achievement motivation?
2000	An examination of the content and construct validity of four measures of procrastination (Unpublished master dissertation).
1997	Relation between time structure and procrastination.
1998	Volitional action and inaction in the lives of undergraduate students: State orientation, procrastination and proness to boredom.
1976	Development and validation of the health locus of control (HLC) scale.
2011	Effects of group counseling based on self-efficacy for self-regulated learning in students with academic procrastination.
2014	Effects of visual feedback on medical students' procrastination within web-based planning and reflection protocols.
2001	Procrastination and the five-factor model: a facet level analysis.
2001	Procrastination and the five-factor model: A facet level analysis.
1977	Imagery assessment: A survey of self-report measures.
2004	The psychometric properties of the Internet addiction test.
2012	Belonging to tomorrow: An overview of procrastination.
2010	I forgive myself, now I can study: how self-forgiveness for procrastinating can reduce future procrastination.
2017	Life course.
2001	Worry, procrastination, and perfectionism: Differentiating amount of worry, pathological worry, anxiety and depression.

2019	An exploration of problematic smartphone use among Chinese university students: Associations with academic anxiety, academic procrastination, self-regulation and subjective wellbeing.
2016	Validation of the short form of the academic procrastination scale.
2016	Internet addiction and relationships with insomnia, anxiety, depression, stress and self-esteem in university students: a cross-sectional designed study.
1998	Caught in the net: How to recognize the signs of Internet addiction and a winning strategy for recovery.
2016	Relationship of academic procrastination with metacognitive beliefs, emotion regulation and tolerance of ambiguity in university students.
2015	How will I be remembered? Conserving the environment for the sake of one's legacy.
2017	Frequency of Internet addiction and development of social skills in adolescents in an urban area of Lima.
2018	Internet addiction, problematic Internet use, non problematic Internet use among Chinese adolescents: Individual, parental, peer, and sociodemographic correlates.
2018	The development of academic procrastination in first-year secondary education students: the link with metacognitive self-regulation, self-efficacy, and effort regulation.
2007	Book Reviews: Editor's Note: Guidelines for Selecting Books to Review
2013	Book Reviews
2001	The clause in English: In honour of Rodney Huddleston
2018	Is procrastination all that "bad"? A qualitative study of academic procrastination and self-worth in postgraduate university students
2007	A Principal Components Analysis and Validation of the Coping with the College Environment Scale (CWCES)

2019	Prospective memory (partially) mediates the link between ADHD symptoms and procrastination
2009	Social Problem-Solving Processes and Mood in College Students: An Examination of Self-report and Performance-based Approaches
1999	Correspondence
2012	Developments in time preference and their implications for medical decision making
2009	Recent Studies in the Restoration and Eighteenth Century
2000	Staggering under the weight of responsibility: The impact of culture on physical activity among African American women
2009	The Influence of Social Problem-Solving Ability on the Relationship Between Daily Stress and Adjustment
1999	Drafting the International Criminal Court treaty: Two years to Rome and an afterword on the Rome diplomatic conference
2019	Pre-crastination and procrastination effects occur in a reach-to-grasp task
2014	Perfectionism and Motivation of Adolescents in Academic Contexts
1997	Academic procrastination and irrational thinking: A re-examination with context controlled
2015	Ups and downs in mood and energy: Associations with academic outcomes in higher education
2001	A handbook of Slavic clitics
2001	The semantics/pragmatics interface from different points of view
2001	Lingua ex machina: Reconciling Darwin and Chomsky with the human brain
2012	Parenting style and practices in stepfamilies

2017	Procrastinating Behavior in Computer-Based Learning Environments to Predict Performance: A Case Study in Moodle
2016	Students' LMS interaction patterns and their relationship with achievement: A case study in higher education
2009	Social Problem Solving as a Mediator of the Link Between Stress and Psychological Well-being in Middle-Adulthood
2012	Co-Occurring Presenting Problems in African American College Clients Reporting Racial Discrimination Distress
2000	Book Review: Facing the Decisions One Should Make and the Decisions One Wants to Make
2019	Building word knowledge, learning strategies, and metacognition with the Word-Knowledge e-Book
2017	Executive Functioning Among College Students With and Without History of Childhood Maltreatment
1997	The European convention on Bioethics
2020	Optimizing Students' Mental Health and Academic Performance: AI-Enhanced Life Crafting
2008	Indecision and Avoidant Procrastination: The Role of Morningness-Eveningness and Time Perspective in Chronic Delay Lifestyles
2008	How Do the Dimensions of Perfectionism Relate to Mental Health?
1996	The run on Ritalin: Attention Deficit Disorder and stimulant treatment in the 1990s
2000	Spirited dialogue: The case for administrative evil: A critique / A new concept / Unmasking Administrative Evil: The book and its critics / The authors' response
2000	Self-Critical Perfectionism, Coping, Hassles, and Current Distress: A Structural Equation Modeling Approach

2020	Instructional disobedience: a largely neglected phenomenon deserving more systematic research attention
2003	A CASE STUDY OF AN ACADEMIC RETENTION PROGRAM
1997	Recent studies in tudor and stuart drama
2004	Enough: THE FAILURE OF THE LIVING WILL
2018	Further development and testing of the metacognitive model of procrastination: Self-reported academic performance
1998	The antecedents and consequences of academic excuse-making: Examining individual differences in procrastination
2012	Procrastination Automatic Thoughts as a Personality Construct: An Analysis of the Procrastinatory Cognitions Inventory
2016	Cognitive factors predicting checking, procrastination and other maladaptive behaviours: Prospective versus Inhibitory Intolerance of Uncertainty
2002	Remarks on introductory syntax
2019	Pilot study of a Web-based acceptance and commitment therapy intervention for university students to reduce academic procrastination
2016	Treating procrastination chat-based versus face-to-face: An RCT evaluating the role of self-disclosure and perceived counselor's characteristics
2015	An Investigation of the Efficacy of Acceptance-Based Behavioral Therapy for Academic Procrastination
2018	Academic procrastination and academic performance: An initial basis for intervention
2015	Why Are Students (Not) Motivated to Change Academic Procrastination? An Investigation Based on the Transtheoretical Model of Change
2017	Academic procrastination and goal accomplishment: A combined experimental and individual differences investigation

1999	An examination of the literature base on the suicidal behaviors of gifted students
2014	Avoiding procrastination through time management: an experimental intervention study
2015	Decreasing students' stress through time management training: an intervention study
2016	Procrastination is linked with insomnia symptoms: The moderating role of morningness-eveningness
1999	Parental affect and coping
2006	Frustration Intolerance Beliefs: Their Relationship with Depression, Anxiety, and Anger, in a Clinical Population
2004	Problem-Solving Treatment for Complicated Depression in Late Life: A Case Study in Primary Care
2018	Academic procrastination and feelings toward procrastination in LD and non-LD students: Preliminary insights for future intervention
2010	Student contribution in asynchronous online discussion: a review of the research and empirical exploration
2003	Differential Effect of Mirror Manipulation on Self-Perception in Social Phobia Subtypes
2018	Empower, not impose!-Preventing academic procrastination
2019	Acceptance and Commitment Training (ACT) as a Positive Psychological Intervention: A Systematic Review and Initial Meta-analysis Regarding ACT's Role in Well-Being Promotion Among University Students
2006	ACADEMIC, MOTIVATIONAL, AND EMOTIONAL PROBLEMS IDENTIFIED BY COLLEGE STUDENTS IN ACADEMIC JEOPARDY
2000	A follow-up study of one group of achievers and underachievers four years after high school graduation

1995	AN ANALYSIS OF THE CONTRIBUTION OF THE 5 FACTORS OF PERSONALITY TO VARIANCE IN ACADEMIC PROCRASTINATION
2012	Libres Cahiers pour la Psychanalyse No. 21, Printemps 2010: L'angoisse [No. 21, Spring 2010: Anxiety] ¹
2019	School-Related Risk Factors of Internet Use Disorders
2011	SUICIDE PRONENESS IN COLLEGE STUDENTS: RELATIONSHIPS WITH GENDER, PROCRASTINATION, AND ACHIEVEMENT MOTIVATION
2013	Procrastination in Different Life-Domains: Is Procrastination Domain Specific?
2013	Procrastination When Good Things Don't Come to Those Who Wait
2017	Rejection Sensitivity and Depression: Indirect Effects Through Problem Solving
2005	The Relationship of Motivation and Flow Experience to Academic Procrastination in University Students
2019	Investigating and fostering self-regulated learning in higher education using interactive ambulatory assessment
2019	Fostering self-regulation to overcome academic procrastination using interactive ambulatory assessment
2018	Reducing procrastination using a smartphone-based treatment program: A randomized controlled pilot study
2018	Spotlight on math anxiety
2015	Dispositional Optimism as a Correlate of Decision-Making Styles in Adolescence
1998	Performance management and welfare reform: The three-contingency model of performance management applied to welfare reform
2019	I can't decide, and it upsets me: assessing self-critical cognition, indecision, and hope among young adults
2019	The Multilevel Structure of Daily Emotion-Regulation-Strategy Use: An Examination of Within- and Between-Person Associations in Naturalistic Settings

1998	Women at midlife
2014	Psychostimulant use among college students during periods of high and low stress: An interdisciplinary approach utilizing both self-report and unobtrusive chemical sample data
2016	Social Media and Alcohol: Summary of Research, Intervention Ideas and Future Study Directions
1998	Clarification of the conceptualization and measurement of denial in psychosocial oncology research
2019	Playing a video game is more than mere procrastination
2006	Improved self-control: The benefits of a regular program of academic study
2018	A Measure of Delay Discounting Within the Academic Domain
2018	Developing an intervention to overcome procrastination
2013	Reducing Academic Procrastination Through a Group Treatment Program: A Pilot Study
1998	Contractual prayer of Christians and Muslims in Lebanon
1999	Inter-Rater Reliability of Cognitive-Behavioral Case Formulations of Depression: A Replication
2008	Dissertations and Theses From Start to Finish: Psychology and Related Fields, Second Edition
2019	Associations of Parenting Styles with Self-Esteem in Children and Adolescents: A Meta-Analysis
2019	Psychological Counseling in Portuguese Higher Education: What are the Students' Needs?
2015	Clinical psychology of Internet addiction: a review of its conceptualization, prevalence, neuronal processes, and implications for treatment

2016	Comprehending Poetry: What Literature Instructors Can Learn from Students' Strategies
2000	Five days of emotion: An experience sampling study of undergraduate student procrastination
2011	Academic procrastination in college students: The role of self-reported executive function
2017	How I Learned to Stop Worrying and Love Nudges
2018	Procrastination as a Self-Regulation Failure: The Role of Impulsivity and Intrusive Thoughts
2018	Some Middle School Students Want Behavior Commitment Devices (but Take-Up Does Not Affect Their Behavior)
2002	Measures for Clinical Practice: A Sourcebook, 3rd ed
2001	Adverb placement: A case study in antisymmetric syntax
2001	Is the best good enough? Optimality and competition in syntax
2001	Urban Jamaican Creole: Variation in the mesolect
2007	The Role of Experiential Avoidance in the Relationship Between Maladaptive Perfectionism and Worry
2013	Reflexive violence
2002	Procrastination, conscientiousness, anxiety, and goals: Exploring the measurement and correlates of procrastination among school-aged children
2008	Predictably Irrational: The Hidden Forces That Shape Our Decisions
1998	Measuring Learning in Depression Treatment: A Cognitive Bibliotherapy Test
2009	The Effects of Inaccurate Expectations on Experiences with Psychotherapy

2020	Piloting a New Model for Treating Music Performance Anxiety: Training a Singing Teacher to Use Acceptance and Commitment Coaching With a Student
2001	Archaeology and language, vol. III: Artifacts, languages and texts / vol. IV: Language change and cultural transformation
2019	COPD patients' experiences, self-reported needs, and needs-driven strategies to cope with self-management
1999	In memoriam: Mara Selvini-Palazzoli, M.D. (1946-1999)
2019	The Distinct Roles of Proximal and Distal Utility Values in Academic Behaviors: Future Time Perspective as a Moderator
2003	Cognitive Aspects of Compulsive Hoarding
1998	Teacher-selected strategies for improving homework completion: RASE
2012	Understanding of and attitudes to academic ethics among first-year university students
2006	RESEARCH AND PRACTICE OF STUDENT RETENTION: WHAT NEXT?
2001	Slips of the tongue: Speech errors in first and second language production
2018	A critical review of the literature on academic self-handicapping: theory, manifestations, prevention and measurement
2020	Using mental contrasting with implementation intentions to reduce bedtime procrastination: two randomised trials
2015	Childhood attention-deficit/hyperactivity disorder
2017	A Field Experimental Design of a Strengths-Based Training to Overcome Academic Procrastination: Short- and Long-Term Effect
2010	Women With ADHD: It Is an Explanation, Not the Excuse Du Jour
1999	Roosevelt and the Munich Crisis: A Study of Political Decision-Making

2018	Perfectionism as a Predictor of Anxiety in Foreign Language Classrooms among Russian College Students
2000	Diabetes through the life span: Psychological ramifications for patients and professionals
2014	Pharmacological interventions for adolescents and adults with ADHD: stimulant and nonstimulant medications and misuse of prescription stimulants
2009	Recent Studies in Tudor and Stuart Drama
2003	Of human bondage and literary triumphs: Hannah Crafts and the morphology of the slave narrative
1999	The emperor Mobutu
2019	Who is better adapted in learning online within the personal learning environment? Relating gender differences in cognitive attention networks to digital distraction
2007	Measuring Homework Utility in Psychotherapy: Cognitive-Behavioral Therapy for Adult Attention-Deficit Hyperactivity Disorder as an Example
1998	Direction of Fit and Normative Functionalism
2020	Effects of smartphone addiction on sleep quality among Chinese university students: The mediating role of self-regulation and bedtime procrastination
2018	Self-efficacy for self-regulation and fear of failure as mediators between self-esteem and academic procrastination among undergraduates in health professions
2019	The role of personality traits and need for cognition in active procrastination
2015	APAGS Position Statement on the Rights of Psychology Graduate Students
2017	Social-Emotional Learning Teaching Principles for Creative, Talented and Gifted Students
2014	APA/APAGS Statement on the Latest APPIC Internship Match

2010	Doctoral Internships in Professional Psychology
2017	Teaching Principles for Creative, Talented and Gifted Students
2008	Recognized Specialties, Subspecialties and Proficiencies
2017	GPE Grants-at-a-Glance
2017	Request for Applications: Building Research Infrastructure and Capacity Speaker Series at Minority Serving Institutions
2015	Practitioner Pointer: Supervising an intern or postdoctoral trainee
2018	Frequently Asked Questions: BEA Task Force to Develop a Blueprint for APA Accreditation of Master's Programs in Health Service Psychology
2008	Education and Training Resource Documents
2008	APAGS elections and appointments
2018	WikiPizza: Increasing student engagement and learning about psychological assessment
2011	Graduate Student Committee
2014	Graduate Programs in Media Psychology
2013	Students
2017	Education Leaders Joint Statement on Administration's Decision to Rescind Guidance on Federal Protections for Transgender Students [PDF]
2012	Student and Career Information
2004	52 Resolutions and Motions Regarding the Status of Women in Psychology: Chronicling 30 Years of Passion and Progress
n.d.	Postdoctoral Education and Training Standards for The Specialty Practice of Psychoanalysis in Psychology

2013	Interviews with professionals in psychology and law
2012	Information on Undergraduate and Graduate Programs with Some Focus on Religion
2018	No Guns in Schools
2011	Psychoanalytic-Friendly Graduate Programs in Psychoanalysis
2011	Feminist Psychology Links & Resources
2017	2017 Doctoral ARO Summary Data [PDF]
2018	2018 Doctoral ARO Summary Data
2013	Resources for Teaching Psychology and Law
2013	Education and Training in Psychology and Law
n.d.	Overview of the Graduate Psychology Education (GPE) Program
n.d.	Guidelines for Reviewing Manuscripts for Training and Education in Professional Psychology (TEPP)
2012	Division of Adult Development and Aging Publications
2017	2017 Postdoctoral ARO Summary Data
2018	2018 Postdoctoral ARO Summary Data
2011	Implementing Regulation C-20 Analysis: Internship Placement 2008-2010
2018	Div. 43 Postdoctoral Fellowship
2018	Southern Region Internships
2018	Midwest Region Internships

2007	Council of Chairs of Training Councils (CCTC) Recommendations for Communication
2014	Webinar Series
2017	Open Meeting Minutes 2017: RxP Designation Committee
2013	Teaching Techniques
2017	Welcome New Members
2018	2018 Internship ARO Summary Data
2017	2017 Internship ARO Summary Data
2008	The Impact of FERPA/HIPAA Regulations on Addressing Trainees with Problems of Professional Competence (2008 Notes)
2017	Teaching Quantitative and Qualitative Methods
2013	Teaching Tips