
Academic Procrastination of Adolescents: A Brief Review of the Literature

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Abstract: Procrastination is a common behavioral and psychological concern that refers to unnecessarily delaying tasks and experiencing negative results. Adolescent students are the ones especially prone to suffer from academic procrastination as they are in a unique stage of rapid development and growth. Previous research has demonstrated that adolescent academic procrastination is related to self-regulation, self-efficacy, motivation, perfectionism, and parenting. Moreover, the Internet, especially smartphones and online games, has presented new ways to procrastinate. Online learning during the COVID-19 pandemic has implications for academic procrastination as well. Therefore, the aim of this literature review is to synthesize studies on academic procrastination of teenagers and consider individual, family, and technology perspectives. Interventions, such as Cognitive Behavioral Therapy (CBT) and Acceptance Commitment Therapy (ACT), treat procrastination, with common strategies targeting specific behaviors and emotions. To address some limitations, future research should expand to Eastern contexts, construct reliable measures, address distance learning, and develop alternative treatment approaches. This line of research would help teachers and parents support adolescent students in reducing their urges to procrastinate and developing good learning habits to lay a foundation for future studies and work.

Keywords: Academic Procrastination, Adolescent, COVID-19 Pandemic, Internet, Online Class, Procrastination Causes, Clinical Treatment, CBT

1. Introduction

Procrastination has been discussed widely for decades. Synonyms for procrastinating include “delaying” and “postponing” [108]. However, sometimes individuals delay tasks that they deem as low priority, which is a planned strategy. Tuckman defined it as unnecessarily delaying tasks that need to be completed [112]. A more specific definition describes procrastination as “the act of needlessly delaying tasks to the point of experiencing subjective discomfort” [104]. It is an irrational action that is often accompanied by negative consequences including but not limited to personal uncomfortable feelings [67, 63]. Procrastination, “a universal human foible”, is not a minor concern [99]. A Google search of procrastination presents 195,000,000 results, which indicate that this phenomenon has become a prevalent issue and is gaining more and more attention [41].

Particularly, students may experience academic procrastination, in which delayed tasks involve academic

learning [93]. For example, students may procrastinate on doing homework, writing essays, or preparing for exams. In 1977, Ellis and Knaus estimated that up to 70% of college students often procrastinate [28]. This percentage has been shown to increase as the decades pass. In 2007, Steel estimated that 95% of students procrastinate [106]. High school students also procrastinate [73]. Özer’s research found that high school students reported that they almost always procrastinated when preparing for exams [75]. They faced negative academic consequences. Students who delay tasks have less preparation and working time in order to meet deadlines; they might have poorer academic performance compared to students who do not procrastinate [107, 109]. Other consequences involve emotions, such as stress and anxiety, and procrastinators may experience health issues and problem behaviors [31, 61, 38].

Previous studies suggested that the causes of procrastination relate to self-regulation, self-efficacy, perfectionism, motivation, and parenting styles [99, 9, 30, 62,

37]. New technology plays a role in academic procrastination as well. For instance, a study in Turkey found that 85% of teenagers procrastinated, and boys were more likely to spend time on electronic media, such as watching TV and playing computer games [58]. Some studies found a high correlation between the Internet and academic procrastination, especially related to the smartphone [90, 121]. Hong and colleagues found that there was a positive association between problematic mobile phone use (PMPU) and secondary school students' academic procrastination [54]. Moreover, stay-at-home policies in many countries due to the COVID-19 pandemic have transitioned learning from in-person to online. Currently, teenagers spend much more time on the Internet and experience procrastination with online learning [21, 39, 79].

Few studies have discussed treatment because procrastination is not considered to be a psychiatric disorder [94]. Some clinical interventions have been offered to individuals who procrastinate. The most common approach is Cognitive Behavioral Therapy (CBT) [104]. It focuses on changing the irrational cognition of the procrastinator in order to decrease the behavior of academic procrastination [27]. A new therapeutic method is Acceptance Commitment Therapy (ACT). It alleviates the negative emotions associated with procrastination by increasing psychological flexibility [46]. Many researchers say that self-forgiveness and self-control strategies have good results [43, 123]. Some new studies propose that using digital tools to intervene in academic procrastination is effective under specific settings [88, 40].

However, studies focusing on adolescent academic procrastination are scarce. Previous research has focused on college students rather than adolescents, but academic procrastination may begin early in adolescence [78]. Klassen & Kuzucu reported that 83% secondary school students often procrastinated one hour or more per day [58]. Teenagers faced serious procrastination problems and suffered from adverse effects [89]. Most studies on procrastination have been conducted in the Western context [59]. Therefore, the present literature review on academic procrastination has three aims: (1) synthesize the results of studies on adolescents, (2) summarize the models, causes, and treatment methods, and (3) make suggestions for future research.

2. Adolescent Procrastination

2.1. Why Do We Care About Procrastination in Teenagers

High school students are more likely to procrastinate than college students [76, 78]. The transition from middle school to university is when students have the highest tendency to procrastinate [12]. Adolescence is a critical period, and procrastination's effects may worsen or continue from adolescence [91, 89]. The majority of studies showed that procrastination leads to additional emotional problems: stress, anxiety, depression, and low self-esteem [93, 26, 109].

Teenagers experience such emotions when procrastinating [74]. Most students who procrastinate reported suffering from anxiety and poor quality of work compared to those who did not procrastinate [31]. Furthermore, procrastination may cause some health issues, such as sleep problems [103]. Reinecke's team found that procrastination negatively influenced adolescents' interpersonal relationships, especially relationships with parents [89]. Rozgonjuka, Kattagoa & Tähta took research on 366 Estonian students via an online survey and found that academic procrastination negatively correlated with academic achievement [96]. For example, students who procrastinate tended to have unsatisfactory performances, such as incomplete assignments or low test scores [100].

Nowadays, teenagers grow up with digital technology. Recent studies revealed the relationship between academic procrastination and misuse of the Internet. For example, problematic smartphone and social media use, such as misusing Facebook, positively correlated with academic procrastination [121, 51]. Providing timely intervention of academic procrastination during adolescence is crucial. Teenagers need access to appropriate tools to pursue their academics, and teachers and parents can help teenagers develop good study habits. Finding strategies to combat academic procrastination will reduce potential undesirable behaviors in future college studies and work.

2.2. Causes of Teenagers' Procrastination

Our understanding of academic procrastination is limited. The related influences include emotion, cognition, and behavior [30]. Previous studies, employing various research methods and taking place in various contexts, have identified many different patterns of procrastination.

2.2.1. Self-regulation

Many researchers found that self-regulation and procrastination have a positive relationship [99, 83, 59]. Barkley reported that the development of the prefrontal cortex is responsible for planning and regulations, and this ability begins to develop in childhood and gradually stabilizes at the end of adolescence [3, 84]. Steel suggested that procrastination is a "quintessential self-regulatory failure" [106]. It can be divided into emotion regulation and behavior regulation. Sirois and Pychyl referred to the process as "short-term mood regulation" [102]. It is an irrational circle. Tice and his colleagues used a specific laboratory paradigm to compare participants with different moods who are more prone to procrastination. They claimed that procrastination is accompanied with stress, anxiety or other feelings, negative ones may reduce the level of self-regulatory, these unmanageable negative emotions coexist with tasks, so people delay tasks more and it leads to emotional problems again [110, 111]. Wolter focused on behavior regulations, he used adapted self-report surveys conducting two studies on large samples of students. The Pearson correlations indicated that academic procrastinators were often lacking cognitive and metacognitive knowledge and skills, and they do not use

effective learning strategies [119]. Bandura found that students who mastered self-management tried to accomplish tasks on time in different ways while students who lacked these skills kept procrastinating [2]. Self-regulated students use relevant methods, such as setting reasonable goals and applicable plans [100, 61, 119]. Their strategies related to their academic performance: Senécal, Koestner & Vallerand found that students who regulated their behaviors had higher academic outcomes [99].

In addition, a cross-cultural study by Klassen and his team shows self-regulation is related to gender [59]. Researchers explored academic procrastination and related variables in 612 adolescents from Canada and Singapore then found that females' self-regulation levels were higher than men's and the procrastination levels were lower than men's, and the results were consistent among different cultures [59].

2.2.2. *Self-efficacy*

Many researchers found that self-efficacy is highly related to procrastination. Ferrari's compared the self-reported results of 46 procrastinators and 52 nonprocrastinators in 1991, found that procrastinators have lower self-efficacy and self-esteem than non-procrastinators. They also avoided instant evaluation; some procrastinators believed that if they delayed completing a task, the evaluation results of the task, whether given by themselves or others, would be presented later, and this evaluation was directly related to their sense of self-worth [30].

Burka & Yuen's presented a similar conclusion by measuring 161 college students. The regression analysis showed that procrastinators often have low self-confidence and high self-doubt [9]. Gündüz also demonstrated that procrastination and self-efficacy were negatively correlated [42]. Academic procrastinators lacked confidence in their tasks. Students with an optimistic belief that they can complete tasks on time do successfully tend to procrastinate less [124, 61]. Chu and Choi mentioned that when it came to some difficulties, students with high self-efficacy usually found ways to overcome the challenges actively while students with lower self-efficacy often chose to delay or avoid challenges [11]. Krawchuk's study found that college students who lacked confidence in learning suffered from more procrastination problems and had lower academic achievement [66]. Zimmerman et al. studied 112 ninth and tenth graders in two high schools in a large American Eastern city. By analyzing their questionnaires, researchers found that self-regulation confidence is closely related to adolescents' academic performance [125]. Another study on secondary school students from Canada and Singapore found that students who were confident reported less procrastination in the learning process [59]. One explanation from Day, Mensink & Sullivan was that optimistic people trusted that they could complete tasks successfully, even if they delayed their tasks, and their attitude reduced some negative consequences of procrastination [15, 69]. In a meta-analysis study, Van Eerde chose 121 articles which used self-report scales, described the effect size of procrastination on a

variable, and analyzed independent subgroups respectively. He found that self-efficacy was indeed related to procrastination [115]. Therefore, it is an essential predictor of adolescent academic procrastination.

2.2.3. *Motivation*

Motivation is the spontaneous pursuit of a goal by an individual, and academic motivation expresses the way students pursue academics, which is important for learning outcomes [25, 80, 20]. The self-determination theory from Ryan & Deci described the types and functions of motivation in detail [97]. Klassen et al. also proposed that procrastination is the antithesis of motivation and that procrastinators lack sufficient intention to reach their goals and do not take actions based on a mixed-methods self-report survey [97, 62].

There is a considerable body of research demonstrating the relationship between motivation and academic procrastination. Dietz et al. stated that low motivation to learn brings about less effort and less perseverance, conditions that cause procrastination to occur [19]. Klassen et al. demonstrated that academic motivation is negatively related to academic procrastination across cultural settings [60]. A similar result was obtained by Cerino in a survey of university students [10]. And Senécal, Koestner & Vallerand, based on Deci and Ryan's theory of intrinsic and extrinsic motivation, found that students with spontaneous, intrinsic reasons to pursue their studies procrastinated less, but those who studied because of extrinsic motivation procrastinated more [99, 8, 16]. Lee conducted a study on 262 Korean students by using questionnaires of procrastination and motivation showed that lack of self-determined motivation related to higher procrastination [68]. A study of students' online learning by Rakes & Dunn found similar results: students' procrastination behaviors increased as intrinsic motivation to learn decreased [86].

2.2.4. *Perfectionism*

Burka and Yuen predicted that procrastination might be the result of the high requirements and expectations of the work [9]. Flett et al. described students who procrastinate in learning suffered from "the anticipation of social disapproval from individuals with perfectionistic standards for others [34]." In Solomon and Rothblum's research, students reported that they feared unsatisfactory results, so they chose to delay tasks [104]. This feeling of fear of failure was positively correlated with depression, which usually connected to anxiety [98]. Hannok argued that there is a cultural difference: for instance, students and their parents in Eastern cultures may have high requirements, while Westerners had less perfectionism [44].

However, the specific relationship between perfectionism and academic procrastination may be still unclear. Flett et al. studied 131 students and after collecting the measurement results of perfectionism and procrastination, although the correlation analysis shows that they are related, there may be other mediators that influence procrastination [34].

2.2.5. Parenting Style

The parenting style plays a vital role in the growth of adolescents because parents have the majority interactions in children's social life, and parenting has both positive and negative influences [117, 50]. In two independent studies of 580 and 809 students from grades 7 to 9 in Portugal, the researchers found a negative correlation between parents' educational level and children's procrastination [92].

Many researchers found that teenagers with proper supervision tended to procrastinate less. Gündüz reported a positive correlation between one type of parenting and academic procrastination: the more parents intervened, the less procrastination their children had in the future [42]. Won et al. suggested that parents can help their children avoid delaying academic tasks by helping them understand that they can manage their time effectively [120]. Children who experienced high parental expectations or frequent parental criticism have less academic procrastination [37, 34]. However, Won et al. found that students were more likely to lose initiative and sense of responsibility when they were heavily controlled by parents [120].

Ferrari & Olivette found that stern inflexibility and overcontrol of parents were related to adolescent procrastination [32, 83]. Flett, Hewitt, and Martin hypothesized that children's procrastination was a response to parents' harsh measures and high expectations [35, 83]. Shih found that for academic tasks, such as homework and exam preparation, students took the initiative to complete the tasks under positive expectations of their parents, but harsh criticism resulted in negative feedback and more procrastination [100]. The consequences of these different parenting styles may lead to academic-related conflicts between adolescents and their parents [24].

2.2.6. Internet

In the information age, concerns of technology usage emerged. Statista reported that in January 2021, there were 4.66 billion active Internet users, of which 92.7% are mobile access [105]. China, India, and the United States have the largest numbers of Internet users. A survey from the US NCES found that 59% of children and teenagers use the Internet [114]. Pew Research Center reported that in 2018, 95% of US teens ages 13-17 years had access to smartphones and nearly half of them were using the Internet [1].

Such a high proportion of Internet usage may have negative consequences. Yoo et al. suggested that the inappropriate usage of the Internet was associated with impaired mental function, such as depression and subjective stress in Korean middle- and high- school students [122]. Yang et al. and Rozgonjuka et al. found similar conclusions by taking the use of smartphones, the carrier of online applications, as an example and pointed out the correlation between this behavior and academic procrastination [121, 96]. Using entertainment Internet may result in academic procrastination [90]. Entertainment Internet may tempt students to stay online for instant satisfaction, rather than spending time and energy on learning tasks [102, 97].

Frequent Internet use could distract students from learning, especially when they have higher autonomy on digital media [4, 49]. The Internet may cause students to deviate from learning content and goals, which might lead to academic procrastination [96, 85]. Vice versa, academic procrastination may lead to increased mobile phone use. In a recent cross-sectional study in China, 633 high school students completed three self-report questionnaires at an interval of 6 months in 1.5 years, those who procrastinated at the beginning were more likely to experience problematic mobile phone use (PMPU) after a specific time [54].

2.3. Academic Procrastination in COVID-19 Pandemic

Many countries have closed public spaces and entered lockdowns to combat the COVID-19 pandemic since 2020. It caused many people to face mental health challenges, such as stress, anxiety, and depression. They tended to overuse Internet-related activities, such as social media and online games, as coping strategies to alleviate negative emotions [57]. Fernandes et al., and DAK-Studie investigated large samples of adolescents in different countries and regions and reported that the frequency and duration of Internet use among adolescents were significantly higher than before the pandemic [29, 14]. Dong et al. conducted a cross-sectional, anonymous, and self-reported survey on the characteristics of Internet use, stress and depression among 2050 Chinese children and adolescents aged 6 to 18. They reported that they did find a significant increase in Internet use, which is related to the negative emotions brought by COVID-19 [21]. Gokler & Turan's research showed that a high proportion of students used the Internet for four hours and more every day during the lockdown period. Further, male students had higher Internet use and academic procrastination compared to female students [39].

The overuse of digital technology has consequences for minors' mental health, and adolescents may be more vulnerable than other age groups [71, 18]. Doty et al. demonstrated a spillover effect of Internet overuse that may lead to procrastination in non-cyber environments [22]. Some high school students' academic procrastination behaviors positively correlated with Internet use [113]. A decrease in students' academic procrastination related to a decrease in Internet use levels and an increase in general grade point average (GPA).

Moreover, during the COVID-19 pandemic, schools across the world adopted distant learning, which presents great challenges to adolescents. Rasheed, Kamsin, and Abdu acknowledged that online education gives learners great flexibility and autonomy [88]. Students tend to use the time they would have spent for studying on other activities. When they learn using digital tools, they also face the temptations of the Internet. They need to have more self-management skills and motivation to resist being diverted. With online learning, there seems to be an increase in passive academic procrastination [79].

3. Procrastination Treatments

Less attention is on the treatment for procrastination [94]. One reason is that although mental distress may ensue, procrastination is not considered a mental illness [94]. Solomon and Rothblum suggested that academic procrastination is the result of the complex interaction of cognition, behavior, and emotion [104]. Therefore, the most commonly used and preferred treatment is Cognitive Behavioral Therapy (CBT) [104, 9]. Its representative method is Rational Emotive Behavior Therapy (REBT). This approach comes from the ABC model proposed by Ellis and Knaus [28]. People experience an event A, to which they respond emotionally and behaviorally C. It is not the event itself that leads to C, but the perception of that, which refers to our beliefs B. Cognitive therapy helps people reassess the situation they face in the present moment and allows them to identify, modify irrational beliefs, and change undesirable behaviors [87, 27]. It is considered as one of the most important steps in the treatment for procrastination [31, 82].

Moreover, Knaus proposed several practical techniques based on cognitive-behavioral theory to help clients identify beliefs and challenge their irrational thoughts, which give them a sense of balance and control over their lives [64]. This approach achieves overall effectiveness [5]. A new controlled study in a private high school in India found that REBT has a significant impact on academic procrastination for secondary school students [56]. However, there are insufficient clinical trials of procrastination treatment to identify the reasons why CBT techniques produce results and the specific mechanisms of action [82]. Many researchers conducted controlled studies showing the effectiveness of CBT as a psychological treatment for procrastination but still could not give a definitive answer [77, 116].

Some researchers proposed that traditional CBT patterns can lead to short-term effects because they ignore the underlying personality mechanisms while a new method, Acceptance Commitment Therapy (ACT), appears to be more effective in the long term [116]. By enhancing psychological flexibility, ACT allows people to stop avoiding, denying, and struggling with their inner emotions and empowers them to accept and recognize their negative experiences, thereby improving life quality [46, 48]. ACT's primary emphasis is on context rather than changing cognitive content. It focuses on values and self-context and improves the functioning of an individual's general mental processes [116, 47, 52]. This method is widely used to alleviate psychological problems, such as work stress, test anxiety, depression, and obsessions [46, 13]. Researchers have conducted experiments in both individuals and groups, and results have confirmed the effectiveness of ACT in academic procrastination, which have practical implications for students who procrastinate [116, 55, 36]. Therefore, specific treatment should be chosen depending on the reasons of academic procrastination and individual traits [45].

Another approach is the self-forgiveness strategy. Hall and Fincham found this process to be a shift from

self-punishment to self-acceptance, thereby reducing the negative consequences of procrastination [43]. Self-forgiveness allows individuals to move past the burden of previous behaviors and concentrate more on the upcoming learning tasks to make a positive impact on future academic performance [118]. Two studies both demonstrate that self-forgiveness strategies enhance feelings of self-worth and positive emotions and result in personal growth [101, 72].

Other interventions emphasize self-management and regulation strategies, mainly based on spontaneous motivation [63]. Ziesat, Rosenthal, and White indicated that learning behavioral self-control skills are necessary [123]. Burka and Yuen suggested using behavioral goals to monitor individual progress and feelings during completing tasks. Rozental et al. proposed using time management strategies to eliminate distractions and increase motivation to overcome procrastination [9, 95]. Boice summarized ten principles of self-regulation and monitoring systematically [6]. The involvement of parents and teachers is essential in this process. One study showed that parental involvement in children's education facilitated their learning of academic adjustment strategies [81]. Klassen et al. suggested that students should be provided with appropriate tools to address academic procrastination; students need encouragement and guidance [59]. By helping students set specific goals and by conveying clear expectations and directions, teachers and parents can help students gain a sense of control. When students feel agentic, then they might be able to make better choices when facing temptations to procrastinate [119, 7, 23].

In the COVID-19 pandemic, Deslandes and Coutinho put forward that the effectiveness of online learning is closely related to the level of self-regulation and self-control, and students with low self-regulation usually have higher levels of academic procrastination and low effectiveness in learning [17]. Pelikan et al. found that students who lacked sufficient self-regulation and intrinsic motivation were prone to passive procrastination with distance learning [79]. However, to some extent, the digital environment could help students decrease procrastination behaviors because the Internet allows adolescents to connect with the outside world, alleviating feelings of isolation [17]. Teachers can help students by leveraging flipped classrooms, using interactive online tools and materials to arouse the enthusiasm and motivation of students and make them engaged, so as to reduce the occurrence of procrastination [40]. Technological tools, such as program reminders on computers and smartphones, may also reduce procrastination in online learning by establishing active and close connections between students and learning content [88].

4. Limitations and Future Studies Direction

The current studies have several limitations. First, the different choices of research methodologies and tools lead to inconsistent research results [83, 42]. Reasons for academic

procrastination, its manifestations, students' psychological processes, and personality traits are highly variable, and it is difficult to examine all possible aspects related to procrastination in one experiment. One explanation proposed by some scholars for the different results are the various dimensions of the studies, mainly in the form of one- and multidimensional differences [34, 104]. Second, most of the studies are cross-sectional, tracking the development of academic delays over a certain period, and lack in-depth follow-up investigations over time. The interpretation of causal relationships between academic procrastination and related psychological processes is insufficient for exploring the mechanisms underlying procrastination treatment programs [96, 116]. Third, research on academic procrastination, although it includes individual counseling samples and group samples, is still not in place to study individual differences and their effects, such as the analysis of personal traits and learning styles of academic procrastinators, so it is unclear that the results are reliable [33, 96]. Last, academic research in cross-cultural contexts is scarce. The values and beliefs that arise in a particular culture have a potential impact on learners. For example, students' motivation to learn may be different in Eastern and Western cultures. These four main limitations influence research on the causes and treatments of academic procrastination [70, 65].

Additionally, many researchers have raised their views on the validity of questionnaires measuring academic procrastination behaviors. Rozgonjuka, Kattagoa & Tähta indicated that the self-descriptive questionnaire used in their study might have led to the fragility of the results as students avoided talking about detrimental issues in their self-evaluations [96]. Due to wanting to be socially desirable, participants deliberately made answers inconsistent with their real-life situations [121]. Yang et al. found that during the testing process, they could not confirm whether the participants fully understood the questionnaire statements, which might lead to biased responses [121]. Since there are fewer scales to evaluate procrastination and some questionnaires are translated to multiple languages, students may not fully understand the questionnaire. Indeed, there are concerns about the reliability and validity of the results.

Future research on academic procrastination should develop research methods and analyze data from multiple dimensions so that results are generalizable and reliable. Research could be expanded to include a broader age and participants from various countries. Using a combination of cross-sectional and longitudinal approaches would enable researchers to identify specific mechanisms in which individual or group procrastination occurs and develop and compare the long-term effects of different treatment approaches. Future treatment plans should include multiple strategies and timely integration and innovation. The choice of clinical therapy methods should be individualized and assessed according to individual differences.

Moreover, research should consider the times and emerging technologies. Now, adolescents use technology, and

so research should carefully differentiate the results of the use of technology, such as computers, cell phones, and game consoles, to predict adolescents' procrastination behaviors. The aim is to gain a more comprehensive understanding of the impact of the Internet on adolescents' academic procrastination to prevent subsequent undesirable behaviors. This line of research can assist practitioners and educators whose mission is to help students learn despite all the temptations to procrastinate.

5. Conclusion

Procrastination, as a widespread phenomenon, has gradually captured researchers' attention. For students, academic procrastination affects their academic performance and may harm their physical and mental health [74]. Teenagers are likely to procrastinate and need support and help in many aspects [78]. Current research has shown that adolescents' academic procrastination relates to a variety of factors. In terms of individuals, the ability of self-regulation is inversely proportional to the degree of academic procrastination, and students with low self-efficacy, who lack confidence in completing learning tasks, often choose to delay work [2, 9]. In addition, some students do not pay enough attention to learning and lack motivation, leading to postponement of tasks; those who have high expectations are also prone to procrastination [97, 104]. In terms of family, parental involvement has both positive and negative effects [42, 35]. Finally, with the wide use of technology and distance learning, teenagers navigate the Internet almost every day. The Internet poses many distractions, and digital media has the potential to increase academic procrastination [49].

There are some interventions for procrastination. Cognitive behavioral therapy (CBT) is widely used and mainly aimed at changing students' cognition to improve their behavior [104, 9]. A new method, acceptance commitment therapy (ACT), is being recognized. This approach helps students accept their emotions on procrastination by comprehensively improving their psychological flexibility [48]. Self-forgiveness strategies aim to mitigate the psychological burden of bad behaviors [43]. Also, self-management skills and supervision are essential [63]. Parents' guidance, teachers' task arrangement, and new digital tools could help students reduce academic procrastination [40, 88].

The differences in research dimensions, the length of experiment time, cross-cultural backgrounds, and the reliability of the questionnaire are some limitations of the current research. Future research should consider the influence of technology and distance learning on academic procrastination and develop alternative treatment approaches. This line of research has pedagogical implications. Findings would help teachers and parents support adolescent students in reducing their urges to procrastinate and developing good learning habits to lay a foundation for future studies and work.

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