1 2 9 0

UNIVERSIDADE Ð
COIMBRA

Margarida Figueiredo Roque

PERFECTIONISM AND ACADEMIC PROCRASTINATION: THE MEDIATING ROLE OF EMOTION REGULATION

julho de 2022

Faculdade de Psicologia e de Ciências da Educação
da Universidade de Coimbra

Perfectionism and academic procrastination: The mediating role of emotion regulation

Margarida Figueiredo Roque

Dissertação no âmbito do Mestrado em Intervenções Cognitivo-Comportamentais em Psicologia Clínica e da Saúde orientada pelo Professor Doutor Marco Daniel de Almeida Pereira e pela Professora Doutora Paula Cristina de Oliveira de Castilho Freitas e apresentada à Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

julho de 2022

1 2 9 0

UNIVERSIDADE Ð
COIMBRA

Institutional framework

The present dissertation was developed within the strategic project of the Center for Research in Neuropsychology and Cognitive-Behavioral Intervention (CINEICC) (UIDB/00730/2020).

Statement of integrity

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

Agradecimentos

Finda a grande aventura que foi a elaboração desta dissertação, não faz sentido começar de outra forma, sem ser por agradecer a todas as pessoas que tornaram este trabalho possível. Não seria capaz de o fazer sozinha, e fico imensamente grata por todos os que me ajudaram a chegar aqui. Assim, deixo um agradecimento enorme:

Ao Professor Doutor Marco Pereira, por todo o acompanhamento e paciência que reservou para mim durante este ano letivo, por estar sempre disponível para responder às minhas (inúmeras) dúvidas, e por ter garantido que este trabalho alcançava o seu potencial máximo.

À Professora Doutora Paula Castilho, por toda a disponibilidade e pelo interesse demonstrados, e por ter partilhado o seu conhecimento comigo, que tanto me ajudou na elaboração deste trabalho.

À minha madrinha, Anabela, por ser o meu maior apoio e a minha maior fã. Tudo o que fiz, foi por ti. Tudo o que sou, sou-o graças a ti. Obrigada por seres o meu maior incentivo para seguir os meus sonhos e dar o meu melhor em tudo o que faço – nada disto seria possível sem ti.

À Rafaela e à Anita, por terem sempre paciência para me ouvir reclamar nos momentos mais difíceis, e por demonstrarem sempre disponibilidade para me ajudar no que fosse preciso. Obrigada por terem acompanhado o meu percurso desde o início e por terem acreditado em mim, especialmente nos momentos eu que eu própria duvidava.

Às colegas Filipa, Sílvia e Mariana(s), pelas palavras de encorajamento, momentos de partilha, e disponibilidade constante para a entreajuda. Foi uma honra partilhar este percurso com vocês.

A Coimbra, por me ter oferecido um lugar ao qual chamar "casa", um ponto de abrigo onde me podia sentir segura, e amigos que levo para a vida. Não podia ter escolhido uma cidade melhor, e guardo no coração todas as memórias que aqui criei. Não te digo adeus, porque te levo sempre comigo, e porque parte de mim pertencer-te-á sempre.

Às restantes pessoas que, por falta de espaço, não me é possível nomear, mas que me auxiliaram de alguma forma durante este percurso: um grande obrigada a todos e a cada um. Nada disto seria possível sem o vosso apoio.

Resumo

Vários estudos têm identificado o perfeccionismo e as dificuldades na regulação emocional como possíveis causas da procrastinação no contexto académico, especialmente no ensino superior. Considerando o impacto que a procrastinação pode ter na vida académica dos estudantes, este estudo teve como objetivo analisar o papel mediador da regulação emocional na associação entre o perfeccionismo e a procrastinação. A amostra deste estudo transversal foi constituída por 340 estudantes universitários (Idade média: 22.06 anos; 69.04% do género feminino), que completaram um conjunto de questionários relacionados com perfeccionismo, dificuldades na regulação emocional, e procrastinação. Os resultados deste estudo apontaram para a existência de correlações positivas entre o perfeccionismo e dificuldades de regulação emocional, bem como com a procrastinação. Os resultados revelaram correlações positivas entre mais dificuldades na regulação emocional e níveis mais elevados de procrastinação. Relativamente aos modelos de mediação, os resultados mostraram que as dificuldades na regulação emocional mediaram a associação entre o perfeccionismo (em particular, o total da escala e a dimensão Procura da Perfeição) e a procrastinação. Os resultados sugerem um papel muito importante das competências de regulação emocional e que a avaliação de processos de regulação emocional poderá ser uma mais-valia no contexto académico, ao permitir identificar os estudantes com maior propensão para procrastinar como consequência de uma dificuldade acrescida em gerir o seu perfeccionismo e os seus objetivos irrealistas. Os resultados obtidos também poderão informar profissionais relativamente à utilidade de considerar a inclusão de intervenções de cariz psicológico centradas no processamento emocional e na aprendizagem de estratégias de regulação emocional nas intervenções existentes para a procrastinação.

Palavras-chave: Perfeccionismo; Procrastinação; Regulação Emocional; Contexto Académico.

Abstract

Research has identified perfectionism and difficulties in emotion regulation as possible causes of procrastination in the academic context, specifically in higher education. Considering the impact that procrastination may have on students' academic life, the aim of this study was to analyze the mediating role of emotion regulation in the association between perfectionism and procrastination. The sample of this cross-sectional study consisted of 340 university students (Mean age = 22.06 years; 69.04% female), who completed a set of questionnaires related to perfectionism, difficulties in emotion regulation and procrastination. The results indicated the existence of positive correlations between perfectionism and difficulties in emotion regulation, as well as procrastination. The results also revealed positive associations between more difficulties in emotion regulation and higher levels of procrastination. Regarding the mediation models, difficulties in emotion regulation were found to mediate the association between perfectionism (particularly, the total score and the dimension Pursuit of Perfection) and procrastination. Our results suggest the importance of emotion regulation skills and that the assessment of emotion regulation processes can be an important asset in the academic context, as it may allow the identification of students with a greater propensity to procrastinate as a consequence of more difficulties in coping with their perfectionism and unrealistic goals. The results may also inform professionals about the utility of considering the inclusion of emotion-regulation-based interventions on existing interventions targeting procrastination.

Keywords: Perfectionism; Procrastination; Emotion Regulation; Academic Context.

Index

Preamble

Procrastination is a prevalent form of self-regulatory failure that affects around 15-20% of adults (Hammer & Ferrari, 2002; Harriott & Ferrari, 1996; Steel, 2007). Although, to the best of our knowledge, there are no recent empirical studies that directly assessed this prevalence, most studies still attested to the significant dominance of procrastination in the general population. Procrastination is often considered as an irrational delay of behavior, which implies that individuals procrastinate when they delay beginning or completing an intended course of action (Steel, 2007).

In the academic context, procrastination may be seen as the delay of academic duties (e.g., studying, doing homework, reading, completing papers; Kandemir, 2014; Mansouri et al., 2022; Steel & Klingsieck, 2016), which is accompanied by problematic levels of anxiety (Rothblum et al., 1986). This behavior may lead to course withdrawal (Kandemir, 2014; Uzun Ozer et al., 2014), failure, academic unhappiness (Kandemir, 2014), increased levels of stress (Steel & Klingsieck, 2016), as well as negative consequences on physical, psychosocial, and social well-being (Mansouri et al., 2022). When engaging in academic procrastination, students intend to finish a task at a specific time, however they delay its onset, progress, or completion (Mansouri et al., 2022; Steel, 2007).

Procrastination in the academic context is particularly problematic as it appears to be highly prevalent (Klingsieck et al., 2013). While some researchers defend that academic procrastination affects around 30% of students (Ajayi, 2020; Hayat et al., 2020), others have demonstrated that up to 70% of students procrastinate (Jadidi et al., 2011; Klingsieck et al., 2013; Rahimi & Hall, 2021; Steel & Klingsieck, 2016). As a significant consequence, the literature suggests that the degree of procrastination can influence academic achievement (Frost et al., 1990; Madigan, 2019; van Eerde, 2003). Another factor that may impact academic achievement is perfectionism, which can be defined as a personality trait characterized by striving for flawlessness and setting exceedingly high standards of performance accompanied by tendencies for overly critical evaluations of self-behavior (Frost et al., 1990; Madigan, 2019).

A key mechanism in the association between perfectionism and procrastination may be the ability of individuals to self-regulate (Pychyl & Sirois, 2016). By definition, self-regulation is a motivational capacity that satisfies autonomous feelings and makes individuals pursue and reach their personal goals. In this regard, procrastination can be considered a volitional

dysregulation – which involves individuals delaying what they had intended to do, regardless of feeling motivated or anticipating adverse consequences, considering that volitional regulation entails strategic decision making (Valenzuela et al., 2020). In addition, individuals may postpone or avoid aversive tasks to gain short-term positive affect at the cost of long-term goals (Tice & Bratslavsky, 2000).

When faced with tasks or situations seen as demanding or aversive, some individuals prefer to regulate the associated negative emotions rather than pursue their goals (Sirois & Pychyl, 2013). Thus, emotion regulation consists of different strategies to monitor and change the frequency, intensity, duration, emotional reactions, and the expression of a wide range of emotions, especially in goal-related behavior contexts (Gross, 2015). Adaptive emotion regulation strategies involve modulating the experience of intensive emotions, which facilitates the achievement of desired goals (Gratz & Roemer, 2004). In contrast, the use of ineffective emotion regulation strategies may lead to difficulties in several areas, like goal achievement (Gross & Jazaieri, 2014) and modulation of emotional responses (Gratz & Roemer, 2004).

Procrastinators usually report higher levels of overall difficulties in regulating their emotions. Higher levels of procrastination behaviors have been associated with a significant experience of negative emotions (whether as an antecedent or a consequence; Patrzek et al., 2012). These negative emotions exacerbate the need to use strategies to recover from negative emotional states (Mohammadi Bytamar et al., 2020). Similarly, the tendency to set excessively high standards for performance and out-of-range goals also leads to the experience of negative affect (Frost et al., 1990), which tends to appear when individuals encounter a situation in which they might not be able to meet said high standards (Jadidi et al., 2011). Therefore, when confronted with the possibility of not achieving their perfectionist goals, individuals may experience a higher degree of negative affect, which may lead to increased difficulties in emotion regulation (Aldea & Rice, 2006; Eckert et al., 2016; Malivoire et al., 2019; Mansouri et al., 2022). Considering the evidence showing that difficulties in emotion regulation may lead to procrastination (Eckert et al., 2016; Pychyl & Sirois, 2016), perfectionist tendencies might exacerbate this behavior by triggering negative affect in individuals who may not be able to adaptively regulate it (Eckert et al., 2016; Malivoire et al., 2019).

Perfectionism cognitions capture automatic thoughts related to dispositional perfectionism and aid in understanding how perfectionism is related to psychological distress following stressful life events (Macedo et al., 2017). High levels of perfectionism cognitions have been consistently associated with higher negative affect (Hewitt & Flett, 1991; Macedo

et al., 2017; Ogai, 2004). Considering the nature of academic responsibilities and demands, students of higher education are particularly at risk of procrastination (and, consequently, of distress) due to numerous academic pressures. These demands may create concerns over the ability to complete tasks, increase stress regarding unrealistic goals, and lead to the use of procrastination or coping patterns that may be unhelpful in the long run (Athulya et al., 2016). Consequently, a higher degree of perfectionism could lead to difficulties in emotion regulation, therefore leading to procrastination (Pychyl & Sirois, 2016). Besides, as aversive affective states have been shown to cue procrastination by dysregulation, it can be hypothesized that the ability to adaptively cope with aversive affective states may reduce the risk of procrastination behaviors (Eckert et al., 2016).

Theoretical Background

Academic procrastination is a prevalent concern in the academic context (Klingsieck et al., 2013), affecting between 30-70% of students (Ajayi, 2020; Hayat et al., 2020; Jadidi et al., 2011; Rahimi & Hall, 2021; Steel & Klingsieck, 2016). Existing literature suggests that different factors can influence academic achievement, including the degree of procrastination (Frost et al., 1990; Madigan, 2019; van Eerde, 2003) and the degree of perfectionism that individuals present (Frost et al., 1990; Madigan, 2019). In this context, a key mechanism in the link between perfectionism and procrastination may be individuals' ability to self-regulate (Pychyl & Sirois, 2016). Therefore, considering that procrastinators tend to report higher levels of overall difficulties in regulating their emotions (Patrzek et al., 2012) and that higher levels of perfectionism may lead to difficulties in emotion regulation (Pychyl & Sirois, 2016), this study aimed to assess the potential mediating role of emotion regulation in the association between perfectionism and procrastination among university students.

Defining procrastination

Procrastination can be defined as a self-regulatory failure that involves not initiating or finishing important tasks, even with the knowledge that this delay might have negative consequences (Pychyl & Sirois, 2016; Steel, 2010). According to Tice et al. (2001), procrastination is an irrational and temporal disengagement in initiating and accomplishing time-specified tasks. According to these authors, it can also work as an emotion regulation strategy to deal temporarily with negative affect. Although this pattern of intentional behavioral delay and avoidance may be problematic, the procrastination behavior tends to appear because it temporarily alleviates anxiety, leading to positive humor (Rice et al., 2012; Sirois et al., 2017).

Procrastination can appear along a two-dimensional spectrum ranging from contextual to trait procrastination. As a domain-specific phenomenon, procrastination reveals as an unnecessary delay in specific contexts, such as academic performance (Boysan & Kiral, 2017; Sirois et al., 2017). As a trait, procrastination reflects a consistent pattern of chronic avoidance concerning aversive tasks (Sirois et al., 2017).

In the academic context, procrastination may impair academic performance (Eckert et al., 2016), reduce well-being (van Eerde, 2003), increase negative feelings (e.g., shame or guilt; Fee & Tangney, 2000) as well as symptoms of mental health problems (e.g., depression; Eckert

et al., 2016). Consequently, procrastination may be particularly problematic when multiple deadlines exist for academic responsibilities, resulting in increased anxiety or negative mood (Athulya et al., 2016; Rice et al., 2012).

Conceptualizations of perfectionism

According to several authors, perfectionism is seen as the relentless pursuit of perfection and the establishment of excessively high standards and unrealistic goals, accompanied by extreme self-criticism regarding self-behavior (Frost et al., 1990; Limburg et al., 2017; Uzun Ozer et al., 2014). Accordingly, perfectionist individuals have irrational beliefs about the need to be perfect and are almost incapable of feeling satisfaction concerning their performance and achievements (Mansouri et al., 2022; Rice et al., 2012).

Originally, perfectionism was considered a one-dimensional maladaptive trait (Flett et al., 1995; Kurtovic et al., 2019) that consisted only of a belief in high personal standards (Flett et al., 1995) and with mainly negative consequences (e.g., depression, anxiety, etc.; Kurtovic et al., 2019). However, some authors have stressed that this construct is multidimensional and, hence, have developed multidimensional models, including both adaptive and maladaptive features in its comprehension (Jadidi et al., 2011; Kurtuvic et al., 2019). As well, other authors have defended that perfectionism can be divided into an adaptive and a maladaptive dimension (Aldea & Rice, 2006).

Hewitt and Flett (1991) developed a multidimensional model of perfectionism with three dimensions: self-oriented, other-oriented, and socially prescribed perfectionism. Self-oriented perfectionism refers to the belief that striving for perfection and being perfect is imperative and comprises excessively high standards for oneself (Flett et al., 1995; Hewitt & Flett, 1991; Stoeber et al., 2010). This form of perfectionism is intrapersonal, derives and is directed towards the self, being primarily internally motivated (Hewitt & Flett, 1991; Stoeber et al., 2010). Other-oriented perfectionism consists of the high expectations that individuals hold for others. These individuals have intangible standards for others, expect them to do their job perfectly, and tend to evaluate their performance firmly (Hewitt & Flett, 1991). In turn, socially prescribed perfectionism encompasses beliefs that others have excessively high standards for oneself and that acceptance by others depends on the fulfillment of these standards (Flett et al., 1995; Hewitt & Flett, 1991; Stoeber et al., 2010). This form of perfectionism is interpersonal (Hewitt & Flett, 1991; Stoeber et al., 2010), derives from the perception of others and their expectations, and is primarily externally motivated (Stoeber et

al., 2010). Considering that self-oriented and socially prescribed perfectionism consists of behavioral tendencies towards the self, this study will focus on these dimensions and on their influence on individuals' predispositions regarding emotion regulation and procrastination.

Besides this conceptualization, factor-analytical research has supported two higher-order dimensions of perfectionism. These include a more healthy or adaptive dimension and a more unhealthy or maladaptive dimension (Aldea & Rice, 2006; Malivoire et al., 2019). In this context, adaptive perfectionism emphasizes high personal standards and the desire to meet such standards, experienced as motivational and encouraging (Aldea & Rice, 2006). Besides, it includes the need for organization and self-oriented perfectionism (Malivoire et al., 2019). In contrast, maladaptive features include excessive concerns about making mistakes, overly critical self-evaluations, concerns about reaching unrealistically high standards for performance, doubts about actions, and socially prescribed perfectionism (Aldea & Rice, 2006; Malivoire et al., 2019). Unsurprisingly, maladaptive perfectionism has been related to higher negative affect, negative emotions and depression (Dunkley et al., 2012), psychopathology (Flett & Hewitt, 2002), as well as poor academic achievement and satisfaction (Gaudreau & Thompson, 2010).

Emotion regulation

The ability to regulate emotions is fundamental to adaptive functioning and mental health (Cole et al., 1994) and difficulties in regulating emotions have been described as a transdiagnostic vulnerability factor linked to psychopathology (Moreira et al., 2020). By definition, emotion regulation concerns the processes individuals use to change the latency, activation time, intensity, and duration of emotions (Gross, 1998; Moreira et al., 2020). These processes can be conscious or unconscious, voluntary or involuntary, automatic or controlled, and can influence any phase of the development of emotions. Adaptive emotion regulation highlights the importance of the awareness and understanding of emotions (Gratz & Roemer, 2004). This process provides individuals the necessary tools to respond flexibly to environmental demands (Bridges et al., 2004).

Conversely, emotion dysregulation consists of difficulties in several essential abilities, such as being aware of, understanding, and accepting emotions, controlling impulsive behaviors, behaving according to desired goals when experiencing negative emotions, and flexibly using situationally appropriate emotion regulation strategies to modulate emotional responses (Gratz & Roemer, 2004).

Emotion-regulatory strategies refer to the ways in which individuals attempt to achieve their emotion-regulatory goals (Gross & Jazaieri, 2014). The choice of an emotion-regulatory strategy depends on the overall effectiveness of the strategy, the availability of resources necessary for its application, and the intensity of the emotion that needs to be regulated. Therefore, emotion dysregulation leads to the use of ineffective emotion regulation strategies and difficulty choosing the appropriate one to achieve a goal (Gross & Jazaieri, 2014).

Perfectionism and procrastination

Evidence has suggested that perfectionists tend to procrastinate due to unrealistically high standards they deem unachievable (Athulya et al., 2016; Mansouri et al., 2022). Both perfectionists and procrastinators endorse beliefs involving the need for high levels of performance (Flett et al., 1995). This specific characteristic may contribute to a self-regulation failure that leads to chronic procrastination when individuals do not complete tasks due to the fear of not reaching their high standards or not doing something perfectly (Kurtovic et al., 2019; Mansouri et al., 2022; Sirois et al., 2017). This means that high levels of perfectionism may lead individuals to doubt their abilities, which generates procrastination (Mansouri et al., 2022; Uzon Ozer et al., 2014).

As mentioned, according to Hewitt and Flett (1991), self-oriented perfectionism includes a positive motivational component that involves striving to meet goals. Self-oriented perfectionists tend to have an internal locus of control, and they may demonstrate high levels of achievement under specific conditions (Flett et al., 1995). This form of perfectionism incorporates a sense of intrinsic motivation and a tendency to approach rather than avoid achievement situations (Flett et al., 1995). Considering that self-oriented perfectionism leads individuals to strive for perfection and avoid failures (Hewitt & Flett, 1991), the association between self-oriented perfectionism and procrastination should be negative (Flett et al., 1995). In contrast, socially prescribed perfectionism should be positively related to procrastination (Flett et al., 1995). This dimension has been associated with a sense of helplessness about the inability to establish personal control over evaluative standards and a sense of hopelessness about the inevitability of future failure (Flett et al., 1995; Hewitt & Flett, 1991). Individuals with a high level of socially prescribed perfectionism tend to feel that they lack the necessary problem-solving skills required for success, leading them to be more likely to avoid a given task (Flett et al., 1995).

The fear of failure that individuals experience consists of the tendency to assess threats and a sense of anxiety in situations in which a chance to fail exists (Mansouri et al., 2022). In threatening situations, fear of failure gives rise to a high degree of self-doubt, leading persons to doubt their competency for success (Flett et al., 1995; Hewitt & Flett, 1991; Mansouri et al., 2022). These doubts reinforce the fear of failure and may lead individuals to procrastinate more (Athulya et al., 2016; Flett et al., 1995; Hewitt & Flett, 1991; Mansouri et al., 2022). Therefore, students with perfectionistic predispositions are more prone to procrastinate and express increased negative affect related to evaluated tasks (Aldea & Rice, 2006).

Effects of perfectionism on emotion (dys)regulation

A key mechanism in the association between perfectionism and procrastination may be the one's ability to self-regulate emotionally (Pychyl & Sirois, 2016). Existing literature suggests that personality traits and characteristics predispose individuals to learn specific emotion regulation strategies to respond to the environment (Gross, 2008). Therefore, perfectionism, perceived as a personality trait, may precede the experience of stress and negative affect and might influence the emotion regulation strategies individuals choose to regulate their affect (Malivoire et al., 2019; Vois & Damian, 2020).

For example, perfectionist individuals who experience intense self-doubt accompanied by harsh self-criticism have difficulties feeling satisfaction regarding their performance (Mansouri et al., 2022; Rice et al., 2012), which can be especially problematic in the academic context. These individuals tend to experience anxiety because they fear their work might not be perfect, which leads to a delay in the onset of tasks (Mansouri et al., 2022).

When maladaptive perfectionists feel that their self-imposed high standards are threatened, they experience increased and prolonged negative affect (Malivoire et al., 2019). In response to this negative affect, according to Gyurak et al. (2011), individuals may engage in implicit (i.e., strategies that occur automatically and outside of awareness) or explicit emotion regulation (i.e., purposeful strategies), which may be related to their long-term emotion regulation goals. These emotion regulation strategies may lead to emotion dysregulation and elevated negative affect, considering they follow individuals' emotion regulation goals (Malivoire et al., 2019).

Empirical research on the association between perfectionism and difficulties in emotion regulation, to our knowledge, is limited (Aldea & Rice, 2006; Vois & Damian, 2020), making it challenging to assess the potential impact of this association on procrastination behaviors.

Thus, this study could offer more insight into this association, providing additional evidence as well as new avenues for future research and interventions.

Difficulties in emotion regulation and procrastination

As previously mentioned, there is evidence that procrastination may be related to self-regulation failures (Pychyl & Sirois, 2016; Rice et al., 2012). Thus, self-regulation can be seen as an individual's wrong action (sub-regulation) or as an individual taking ineffective action (wrong self-regulation) in the attempt to initiate, alter, or inhibit a behavior (Baumeister & Heatherton, 1996). Although procrastination can be perceived as a form of sub-regulation where individuals fail to exert the self-control necessary to stay on a determined task, in the context of academic procrastination, it is better understood as a form of wrong self-regulation (Baumeister & Heatherton, 1996).

Procrastinators appear to lack the self-regulatory skills required to effectively manage their emotions, thoughts, behaviors, and time (Wang et al., 2021). When individuals choose to delay a task despite opposite intentions, this reflects a breakdown in self-regulation, which occurs when faced with an aversive task (e.g., tedious, frustrating; Sirois & Pychyl, 2013). According to these authors, this tendency leads to unpleasant feelings or negative moods. Therefore, emotional distress may shift priorities towards the immediate present, working against the usual pattern of impulse control by promoting a short-term focus (Pychyl & Sirois, 2016; Tice et al., 2001). Considering this perspective, individuals engage in procrastination actions as an emotion regulation strategy to regulate the negative affect triggered by the task at hand (Mohammadi Bytamar et al., 2020; Pychyl & Sirois, 2016; Sirois & Pychyl, 2013; Tice et al., 2001).

Considering that aversive affective states might cue procrastination by dysregulation, as noted by Eckert et al. (2016), the ability to adaptively cope with these states could reduce the risk of procrastination. Individuals may procrastinate due to ineffective emotion regulation, triggered by negative affect related to excessively high standards (Malivoire et al., 2019). The use of procrastination in these situations may reduce negative emotions in the short term, but prevents individuals from achieving their long-term goals (Mohammadi Bytamar et al., 2020; Pychyl & Sirois, 2016). However, procrastinating with the purpose of regulating immediate moods often results in individuals feeling worse (Baumeister & Heatherton, 1996; Pychyl & Sirois, 2016; Sirois & Pychyl, 2013). Not only does procrastination potentially undermine

performance, but the overall level of negative affect is likely to increase (Sirois & Pychyl, 2013).

Given that the way individuals regulate their emotions may impact their propensity to procrastinate, the inability to flexibly use situationally adaptive emotion regulation strategies can hinder individuals from achieving goals or meeting environmental demands (Gross, 2008; Mohammadi Bytamar et al., 2020). According to Pychyl and Sirois (2016), although procrastination may pose as an adaptive emotion regulation strategy in the short term, poor emotion regulation and the subsequent variability in affective states can have serious consequences for individuals' physical and psychological health.

The procrastination behavior may pose a consequence in different areas of individuals' lives, especially in the academic context. If we assume that perfectionist standard-setting leads to the experience of negative affect when individuals perceive a chance of failure (Malivoire et al., 2019; Mansouri et al., 2022), then procrastination may operate as a consequence of a failed emotion regulation strategy (Eckert et al., 2016; Pychyl & Sirois, 2016; Sirois & Pychyl, 2013). This means that, by working on their abilities to adaptively regulate their emotions, individuals may be able to reduce their procrastination behaviors, even if their perfectionism levels remain elevated.
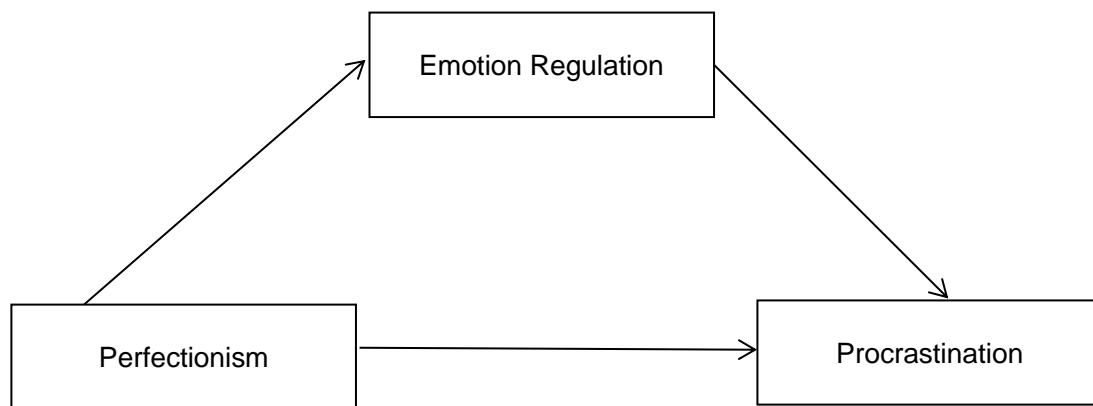

The current study

Given the negative consequences of procrastination in students and the lack of insight into its determinants, this study aimed to analyze the associations between perfectionism, emotion regulation, and procrastination. To our knowledge, the mediating role of emotion regulation on the association between perfectionism and academic procrastination has not been studied. Hence, this study could add a new perspective to a familiar topic, leading to innovative interventions. Particularly, examining these associations and identifying potential mechanisms that lead to procrastination could have implications for treatments and interventions focused on emotion regulation. As well, by focusing on possible difficulties in emotion regulation, it may be possible to prevent students' predisposition to procrastinate when experiencing negative affect triggered by the threat of not achieving their perfectionist goals (Eckert et al., 2016; Pychyl & Sirois, 2016).

Based on the literature review, we hypothesized that maladaptive forms of perfectionism would be positively associated with academic procrastination (e.g., Athulya et al., 2016; Boysan & Kiral, 2017; Mansouri et al., 2022; Rice et al., 2012; Sirois et al., 2017)

and with difficulties in emotion regulation (e.g., Aldea & Rice, 2006; Macedo et al., 2017; Vois & Damian, 2020). We also expected that more difficulties in emotion regulation would be positively associated with procrastination among university students (e.g., Eckert et al., 2016; Mohammadi Bytamar et al., 2020; Rezaeisharif et al., 2021; Sirois & Pychyl, 2013). Finally, we expected that increased maladaptive perfectionism would be associated with higher levels of difficulties in emotion regulation, which in turn would be associated with increased procrastination, as depicted in Figure 1.

Figure 1

Conceptual Mediation Model of the Presumed Influence of Perfectionism on (Academic) Procrastination through Emotion Regulation

Method

Participants

To participate in this study, individuals had to be 18 years of age or older, had to be university students, and had to have enough knowledge of the Portuguese language to answer the survey. A total of 352 students participated in this cross-sectional study. Of these, 12 participants were eliminated for the following reasons: three had ages outside the designated interval; two were high-school students; six frequented higher professional technical courses; and one did not specify their current degree. This resulted in a final sample of 340 university students, of which 44 were working-students (12.9%). Participants were between 18 and 51 years old (M = 22.06; SD = 3.74) and most participants were female (69.4%). The detailed characteristics of the study sample are presented in Table 1.

Table 1

Sociodemographic Characteristics of the Sample (N = 340)

	N	*%*
Gender		
Male	97	28.5
Female	236	69.4
Transgender	1	0.3
Other (Non-binary)	6	1.8
Place of Residence		
Rural	113	33.2
Urban	227	66.8
Professional Situation		
Student	296	87.1
Working-student	44	12.9
Marital Status		
Single	240	70.6
Married	4	1.2
Cohabitation	7	2.1
In a Relationship (Living apart)	88	25.9
Divorced/Separated	1	0.3
Physical Health Problems: *n* (% Yes)	8	2.4
Psychiatric/Psychologic Problems: *n* (% Yes)	33	9.7
Psychiatric/Psychologic Care: *n* (% Yes)	70	20.6

Regarding the academic characteristics, most participants frequented an undergraduate degree (46.2%), or a master's degree (46.2%) of a public institution (90%). The detailed academic characteristics are described in Table 2.

Table 2

Academic Characteristics of the Sample (N = 340)

	N	*%*
Type of Educational Institution		
Public	306	90
Private	34	10
Educational Degree		
Undergraduate	157	46.2
Master's	157	46.2
Doctoral	13	3.8
Other	13	3.8
Course Failure (≥ 1)		
Yes	9	2.6
No	289	85.0
Not applicable/ No answer	18	5.3
Intention to Complete Current Course		
Yes	305	89.7
No	16	4.7
Expectations of Completing Current Academic Year		
Yes	307	90.3
No	22	6.5

Instruments

Sociodemographic Questionnaire

A brief sociodemographic questionnaire was developed by the researchers and collected sociodemographic (e.g., gender, age, marital status, education level, place of residence), as well as academic-related information.

Irrational Procrastination Scale (IPS)

The IPS (Steel, 2010) is a one-dimensional self-reported scale based on the concept of procrastination as an irrational delay. The scale is composed of nine items (e.g., "My life would be better if I did some activities or tasks earlier."), of which three (items 2, 6, and 9) are scored

inversely. Items are answered on a five-point scale that ranges from 1 (very rarely/never) to 5 (very often/always), with higher scores indicating higher levels of procrastination (Steel, 2010). Both the original and the Portuguese versions of the scale showed excellent reliability, with a Cronbach's alpha of .91 (Pereira & Duarte, 2021; Steel, 2010).

Pure Procrastination Scale (PPS)

The PPS (Steel, 2010) is a self-reported 12-item scale that assesses the prevalence of procrastination behaviors considered as a dysfunctional delay. The PPS is built on a three-factor scale: delay in planning and decision making (3 items: e.g., "I delay making decisions until it's too late."); delay in implementation of behavior (5 items: e.g., "Even after I make a decision I delay acting upon it."); and readiness, meeting of deadlines, and punctuality (4 items: e.g., "I am not very good at meeting deadlines."). The items are answered on a five-point response scale, ranging from 1 (very rarely/not true for me) to 5 (very often/true for me), with higher scores indicating higher levels of procrastination. The original version showed good internal consistency for the full scale ($\alpha = .92$), as well as for the three factors (all $\alpha > .89$; Steel, 2010). The Portuguese version showed a Cronbach's alpha of .93 for the full scale, of .83 for the decisional delay factor, of .91 for the irrational delay factor, and of .81 for the timeliness factor (Pereira & Duarte, 2021).

Multidimensional Perfectionism Cognitions Inventory (MPCI)

The MPCI (Stoeber et al., 2010) is a multidimensional 15-item scale developed to assess the frequency of cognitions associated with dispositional perfectionism along three dimensions: concern over mistakes, which captures cognitions about mistakes and associated negative affect (e.g., "I'll blame myself if I make a mistake."); personal standards, which captures cognitions about having perfectionistic standards (e.g., "It's important to set high standards for myself."); and pursuit of perfection, which captures cognitions about the need to be perfect (e.g., "I can't feel satisfied unless things are done perfectly."; Stoeber et al., 2010). This inventory was developed to further explore positive and negative perfectionism cognitions. The items are answered on a four-point response scale ranging from 1 (never) to 4 (always), with higher scores denoting a higher frequency of perfectionism cognitions. The original version showed good reliability, with a Cronbach's alpha between .78 and .84 (Stoeber

et al., 2010). The Portuguese version also showed good reliability for the total scale ($\alpha = .89$), and for the three factors (all $\alpha > .83$; Macedo et al., 2014).

Difficulties in Emotion Regulation Scale – Short Form (DERS-SF)

The DERS-SF (Kaufman et al., 2015) is an 18-item scale used to assess difficulties in emotion regulation. This measure covers six subscales: non-acceptance of emotional responses, difficulty engaging in goal-directed behavior, difficulties with impulse control, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Each item is answered using a five-point response scale, ranging from 1 (almost never) to 5 (often). Higher scores indicate greater difficulties in emotion regulation. Both the original and the Portuguese versions showed excellent internal consistency, with a Cronbach's alpha of .93 (Kaufman et al., 2015; Moreira et al., 2020).

Procedures

This study is part of a larger research project focused on procrastination, which had as an initial goal to develop and assess the psychometric characteristics of the European Portuguese versions of the Irrational Procrastination Scale (IPS) and the Pure Procrastination Scale (PPS). The original study was conducted in a community sample. However, for the purpose of this study, only university students were eligible to participate.

Data were collected through an online LimeSurvey® platform (hosted on the website of the Faculty of Psychology and Educational Sciences) between January 2021 and March 2022. The survey consisted of a cover page, which comprised information regarding the aims of the study, inclusion criteria, role of participants, rules of confidentiality and anonymity of the responses, and contacts of responsible investigators. Before initiating the survey, all participants had to give informed consent regarding their willing participation in the study (by clicking "Yes" on the option "Do you accept to participate in the study?") after information was given about the study's goals and the voluntary and anonymous aspects of participation. Participants received no compensation or incentives for participating in this study.

The survey link was disclosed through email contacts and publications made on social networks such as Facebook, LinkedIn, Instagram, and Twitter. This study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra.

Data analyses

Statistical analyses were performed using IBM SPSS version 25.0 and the PROCESS computation tool (Hayes, 2018). First, descriptive statistics (e.g., frequencies, mean [M], standard deviation [SD]) were computed for the sociodemographic, academic, and the main study variables. Pearson's correlations were computed to assess the associations between all study variables. Cronbach's coefficient alpha was used as an indicator of the measures' internal consistency.

The mediation analyses were estimated using model 4 of the PROCESS Macro for SPSS (Hayes, 2018), to examine whether perfectionism was associated with procrastination through difficulties in emotion regulation (see Figure 1). In these models, the total score and the dimensions of perfectionism were the independent variables, procrastination (assessed by the IPS and the PPS) was the dependent variable, and emotion regulation was the mediator. To estimate these models, a *bootstrapping* procedure using 10000 resamples was used to assess the unconditional indirect effects. This procedure creates 95 % bias-corrected and accelerated confidence intervals (95 % BCa CIs) of the indirect effects, which are considered significant if zero is not contained within the lower and upper CIs (Preacher & Hayes, 2008).

Results

Preliminary analyses

Table 3 presents the descriptive statistics and correlations between the study variables, as well as the reliability of the study measures. Overall, the total score of perfectionism was positively associated with procrastination and difficulties in emotion regulation. Similarly, difficulties in emotion regulation were positively associated with procrastination. Regarding the dimensions of perfectionism, maladaptive perfectionism (Pursuit of Perfection, Concern over Mistakes) showed a positive and significant association with procrastination and difficulties in emotion regulation, while the adaptive dimension (Personal Standards) was negatively and significantly associated with procrastination. All the correlations were statistically significant, except the correlations between Personal Standards and Irrational Delay, Timeliness, as well as the total score of both procrastination measures and difficulties in emotion regulation (see Table 3).

Table 3

Descriptive Statistics and Correlations among Study Variables

	M	*SD*	Range	α	PPS	DD	ID	TL	IPS	MPCI	PS	PP	CM
										Correlations			
PPS	2.91	0.86	1.00-4.92	.92									
DD	3.00	0.96	1.00-5.00	.79	.85***								
ID	3.38	1.00	1.00-5.00	.88	.94***	.74***							
TL	2.24	0.91	1.00-5.00	.81	.86***	.60***	.69***						
IPS	3.00	0.96	1.11-5.00	.91	.88***	.73***	.87***	-.08					
MPCI	2.45	0.64	1.00-3.87	.92	.22***	.13*	.21***	.22***	.21***				
PS	2.74	0.78	1.00-4.00	.77	-.07	-.12*	-.07	-.02	-.08	.74***			
PP	2.21	0.82	1.00-4.00	.77	.20***	.13*	.20***	.18**	.20***	.88***	.53***		
CM	2.41	0.83	1.00-4.00	.74	.38***	.29***	.35***	.35***	.36***	.77***	.24***	.56***	
DERS-SF	2.43	0.82	1.00-4.80	.90	.48***	.40***	.42***	.46***	.45***	.42***	.06	.38***	.55***

Note. PPS = Pure Procrastination Scale; DD = Decisional Delay; ID = Irrational Delay; TL = Timeliness; IPS = Irrational Procrastination Scale; MPCI = Multidimensional Perfectionist Cognitions Inventory; PS = Personal Standards; PP = Pursuit of Perfection; CM = Concern over Mistakes; DERS-SF = Difficulties in Emotion Regulation Scale – Short Form.

*p < .05; **p < .01; ***p < .001.

Mediation analysis

In this study, six mediation models were computed to assess the mediating role of emotion regulation on the association between perfectionism and procrastination. All models comprised the same independent variables and the same mediator. The main difference was the dependent variable, where two measures of procrastination (IPS and PPS) were used to assess possible differences in the associations considering both conceptualizations of the construct.

The results of the mediation models are presented in Table 4 and Table 5. In all models, the total effects (i.e., the association between perfectionism and procrastination) were positive and statistically significant. Regarding the direct effects, only the association between the dimension Concern over Mistakes and procrastination was significant. The results also showed that the direct effects of Pursuit of Perfection and the total perfectionism on procrastination were not significant. All of the indirect effects were also statistically significant (see Table 4 and Table 5). These results indicate that emotion regulation mediated the association between perfectionism (specifically, maladaptive perfectionism) and procrastination conceptualized as an irrational delay (as assessed by the IPS) and as a dysfunctional delay (as assessed by the PPS).

Table 4

Summary of multiple mediation analyses for models concerning IPS (10000 bootstraps)

Independent variable	Mediating variable	Dependent variable	Effect of IV on M b (SE)	Effect of M on DV b (SE)	Direct effect b (SE)	Indirect effect b (boot SE)		Total effect b (SE)
							95% CI	
(IV)	(M)	(DV)	(a)	(b)	(c')	(a*b)	(LLCI; ULCI)	(c)
Concern over Mistakes			.54 (.05)***	.38 (.06)***	.17 (.06)**	.20 (.03)	.13; .27	.38 (.05)***
Pursuit of Perfection	Emotion Regulation	Procrastination (IPS)	.38 (.05)***	.46 (.06)***	.03 (.06)	.17 (.03)	.11; .22	.21 (.06)***
Total Perfectionism			.53 (.06)***	.46 (.06)***	.03 (.07)	.18 (.03)	.13; .24	.28 (.07)***

Note. IPS = Irrational Procrastination Scale.

*p < .05; **p < .01; ***p < .001.

Table 5

Summary of multiple mediation analyses for models concerning PPS (10000 bootstraps)

Independent variable	Mediating variable	Dependent variable	Effect of IV on M b (SE)	Effect of M on DV b (SE)	Direct effect b (SE)	Indirect effect b (boot SE)		Total effect b (SE)
(IV)	(M)	(DV)	(a)	(b)	(c')	(a*b)	95% CI (LLCI; ULCI)	(c)
Concern over Mistakes			.54 (.05)***	.41 (.06)***	.17 (.06)**	.21 (.03)	.14; .28	.39 (.05)***
Pursuit of Perfection	Emotion Regulation	Procrastination (PPS)	.38 (.05)***	.49 (.05)***	.03 (.05)	.18 (.03)	.12; .23	.21 (.06)***
Total Perfectionism			.53 (.06)***	.49 (.06)***	.03 (.07)	.20 (.03)	.14; .26	.29 (.07)***

Note. PPS = Pure Procrastination Scale.

*p < .05; **p < .01; ***p < .001.

Discussion

In the academic context, several authors have identified perfectionism and difficulties in emotion regulation as possible causes of procrastination (Aldea & Rice, 2006; Flett et al., 1995; Pychyl & Sirois, 2016). Considering the influence that these constructs may have on students' performance, this study aimed to assess the mediating role of emotion regulation on the association between perfectionism and procrastination. The main findings of our study show that students who procrastinate tend to demonstrate higher perfectionism and to experience heightened difficulties in emotion regulation. In addition, our findings also indicate that higher levels of perfectionism are associated with increased procrastination through more difficulties in emotion regulation.

The results of our study indicate that the two dimensions of perfectionism, Concern over Mistakes and Pursuit of Perfection, are positively associated with increased difficulties in emotion regulation. This pattern is consistent with our hypothesis and the literature that demonstrates that maladaptive forms of perfectionism may trigger negative affect that leads to difficulties in emotion regulation (Malivoire et al., 2019; Mansouri et al., 2022). Although, to the best of our knowledge, existing research regarding this association is limited, these results could mean that individuals' perfectionist tendencies, particularly those related to the negative features of perfectionism, may hinder them from employing adaptive emotion regulation strategies. Indeed, considering that perfectionism can predispose individuals to learn specific emotion regulation strategies to respond to the environment (Gross, 2008), excessive levels of perfectionism may lead to the use of maladaptive emotion regulation strategies motivated by unrealistic goals and standards (e.g., hard, unachievable; Malivoire et al., 2019; Vois & Damian, 2020). These unrealistic goals/standards may impede an adaptive emotion regulation if individuals experience negative secondary reactions to the triggered negative affect and if they believe that regulating this emotional state is beyond their capabilities. Thus, the setting of out-of-reach goals and standards might exacerbate individuals' difficulties in emotion regulation.

Regarding the association between perfectionism and procrastination, we found a pattern of correlations consistent with the pattern observed in the existing literature, which indicates a positive association between these variables. This suggests that individuals might procrastinate due to the unrealistically high standards they deem unachievable (Athulya et al., 2016; Mansouri et al., 2022). For example, the suggestion that individuals with higher levels

of maladaptive perfectionism tend to avoid a given task (Flett et al., 1995) is supported by the positive and significant association between the dimensions Concern over Mistakes/Pursuit of Perfection and procrastination. This avoidance of evaluated tasks may be motivated by the individual's fear of failure, leading them to engage in more procrastination behaviors. In the academic context, when students are faced with the threat of not being perfect, they might procrastinate with the objective of not being confronted with the possibility of not reaching their unrealistic standards (Mansouri et al., 2022). These results are also in line with previous research stating that maladaptive dimensions of perfectionism trigger a sense of hopelessness regarding future failure (Flett et al., 1995; Hewitt & Flett, 1991), which may lead individuals to procrastinate more to avoid possible failures.

The results of our study also show that difficulties in emotion regulation are positively associated with procrastination. This pattern is consistent with our study hypothesis and with the existing literature showing that when individuals experience negative affect, they tend to avoid the associated task (Mohammadi Bytamar et al., 2020; Pychyl & Sirois, 2016). Indeed, students might procrastinate when engaging in tasks they consider aversive to regulate the triggered negative emotional states. Specifically, if students experience anxiety due to an academic task, which may lead to a heightened difficulty in completing that task (e.g., in line with the subscale *difficulty engaging in goal-directed behavior* of the DERS-SF; data not shown), and they do not possess the ability to engage in adaptive emotion regulation (e.g.*, limited access to emotion regulation strategies*), it is possible that they may choose to procrastinate instead. Thus, and in line with prior findings (Pychyl & Sirois, 2016; Tice et al., 2001), procrastination can be deemed as a short-term emotion regulation strategy that focuses on managing the negative affect individuals experience, which may compromise the execution of the task at hand.

The mediation models show that emotion regulation mediates the association between perfectionism and procrastination among students. Specifically, these models demonstrate that perfectionism is associated with one's difficulty in employing successful emotion regulation strategies, which in turn is associated with more engagement in procrastination behaviors. In line with our hypothesis, our results demonstrate that difficulties in emotion regulation were a significant mediator of the association between maladaptive dimensions of perfectionism and procrastination. Particularly, difficulties in emotion regulation fully mediated the association between the dimension Pursuit of Perfection and procrastination (β = .21, *SE* = .06, *p* < .001), either assessed by the IPS or the PPS. Considering that this factor captures cognitions about

the need to be perfect (Stroeber et al., 2010), these results seem to support the notion that, in situations where a chance of not meeting the perfectionist standards is identified, students tend to experience heightened difficulties in regulating their emotions, which may reflect in increased procrastination behaviors. Indeed, because individuals cannot adaptively deal with not meeting their unrealistic goals (i.e., their search for perfection), they procrastinate to avoid the task and the source of the related negative affect. Similar results were found in relation to the dimension Concern with Mistakes (the mediation was only partial, however). Accordingly, we could assume that students engage in procrastination in these situations because they do not have the adequate emotion regulation strategies to cope with the associated fear of failure (Mansouri et al., 2022; Sirois et al., 2017).

Besides, students' tendency to procrastinate despite setting high standards for their performance might also reflect difficulties in behaving according to desired goals when experiencing negative emotions (Gratz & Roemer, 2004), which may indicate the impact of emotion regulation on the association between perfectionism and procrastination. Therefore, although procrastination emerges as a short-term strategy for temporary affect regulation (Sirois & Pychyl, 2013; Tice et al., 2001), it may cause more difficulties in the long term due to the maintenance of individuals' fear of failure and the use of maladaptive emotion regulation strategies. The fact that emotion regulation mediates the association between perfectionism and procrastination may also mean that, if students work on their adaptive emotion regulation strategies, they may be able to reduce their engagement in procrastination, even if their concern with mistakes and other perfectionist tendencies remain elevated. Therefore, procrastination behaviors in the academic context may decrease if students are able to employ adaptive emotion regulation strategies, despite their perfectionist standards and goals.

This study has some limitations that should be considered. First, the cross-sectional design does not allow causal inferences or the determination of the direction of associations. The use of a longitudinal design, and in different timings of the academic life, would be valuable for a more comprehensive understanding of the association between the variables reported herein; for example, this could help understand if procrastination in the academic context consists of a domain-specific behavior associated with periods of heightened pressure (e.g., exams season) or if it represents a personality trait (Schouwenburg & Lay, 1995). Second, the sample was recruited through non-probabilistic methods and was recruited online (was self-selected), which limited the scope of the study to individuals with internet access; also, most participants were female (69.4%), which compromise the representativeness of the sample and

the generalization of the results to the general population. Therefore, these results must be read with caution. Third, we have exclusively employed self-report measures, which are prone to higher social desirability. Fourth, we used only the total score of the difficulties of emotion regulation scale. In future studies it would be relevant to explore the specific role of different emotion regulation strategies, which could allow a more thorough understanding of the associations between the variables under study, and also could help clinicians understand how to better tailor their procrastination interventions.

This study has also practical implications for general health promotion by identifying some of the facilitators of difficulties in emotion regulation and procrastination in community samples, specifically in the academic context. For instance, it may be possible to design and implement interventions for risk groups of the general population based on the characteristics identified in our study, particularly those that are associated with a higher likelihood of procrastinating when faced with negative affect. Moreover, it could be possible to develop new programs with the objective of increasing awareness of the importance and impact of these study variables, which could inform students of the possible difficulties they may experience and encourage them to seek support if necessary.

In line with the findings of Eckert et al. (2016), a practical implication of our results is the possibility of integrating a focus on emotion regulation in existing interventions directed at procrastination (e.g., ON.TOP, Eckert et al., 2018) as recently reported (Schuenemann et al., 2022), in order to provide students with additional ways to cope with this behavior. Our results could also help professionals in the academic context recognize students who are more likely to engage in procrastination behaviors towards their academic tasks and responsibilities, and identify more vulnerable students (e.g., those who are more perfectionist and concerned with failure, as well as those who may experience heightened difficulties in emotion regulation) who would benefit most from specific interventions. Finally, our results could also help in the tailoring and implementing of interventions that target students' difficulties in emotion regulation, considering the impact they have on procrastination behaviors and performance. For example, courses that help students cope with aversive emotions induced by academic tasks could be highly relevant, as previously suggested by Eckert et al. (2016).

References

Ajayi, O. S. (2020). Academic self-efficacy, gender and academic procrastination. *Epiphany. Journal of Transdisciplinary Studies*, *13*(1), 75–84.

Aldea, M., & Rice, K. (2006). The role of emotional dysregulation in perfectionism and psychological distress. *Journal of Counseling Psychology, 53*(4), 498–510. https://doi.org/10.1037/0022-0167.53.4.498

Athulya, J., Sudhir, P., & Philip, M. (2016). Procrastination, perfectionism, coping and their relation to distress and self-esteem in college students. *Journal of the Indian Academy of Applied Psychology*, *42*, 82–91.

Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry*, *7*(1), 1–15. https://doi.org/10.1207/s15327965pli0701_1

Boysan, M., & Kiral, E. (2017). Associations between procrastination, personality, perfectionism, self-esteem and locus of control. *British Journal of Guidance & Counselling*, *45*(3), 284–296. https://doi.org/10.1080/03069885.2016.1213374

Bridges, L. J., Denham, S. A., & Ganiban, J. M. (2004). Definitional issues in emotion regulation research. *Child Development*, *75*(2), 340–345. https://doi.org/10.1111/j.1467-8624.2004.00675.x

Cole, P. M., Michel, M. K., & Teti, L. O. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development*, *59*(2–3), 73–100.

Dunkley, D. M., Berg, J.-L., & Zuroff, D. C. (2012). The role of perfectionism in daily self-esteem, attachment, and negative affect. *Journal of Personality*, *80*(3), 633–663. https://doi.org/10.1111/j.1467-6494.2011.00741.x

Eckert, M., Ebert, D. D., Lehr, D., Sieland, B., & Berking, M. (2016). Overcome procrastination: Enhancing emotion regulation skills reduce procrastination. *Learning and Individual Differences*, *52*, 10–18. https://doi.org/10.1016/j.lindif.2016.10.001

Eckert, M., Ebert, D. D., Lehr, D., Sieland, B., & Berking, M. (2018). Does SMS-support make a difference? Effectiveness of a two-week online-training to overcome procrastination. A randomized controlled trial. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.01103

Fee, R. L., & Tangney, J. P. (2000). Procrastination: A means of avoiding shame or guilt? *Journal of Social Behavior & Personality*, *15*(5), 167–184.

Flett, G. L., & Hewitt, P. L. (2002). Perfectionism and maladjustment: An overview of theoretical, definitional, and treatment issues. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 5–31). American Psychological Association. https://doi.org/10.1037/10458-001

Flett, G. L., Hewitt, P. L., & Martin, T. R. (1995). Dimensions of perfectionism and procrastination. In J. R. Ferrari, J. L. Johnson, & W. G. McCown (Eds.), *Procrastination and task avoidance: Theory, research, and treatment* (pp. 113–136). Springer US. https://doi.org/10.1007/978-1-4899-0227-6_6

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, *14*(5), 449–468. https://doi.org/10.1007/BF01172967

Gaudreau, P., & Thompson, A. (2010). Testing a 2×2 model of dispositional perfectionism. *Personality and Individual Differences*, *48*(5), 532–537. https://doi.org/10.1016/j.paid.2009.11.031

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, *2*(3), 271–299. https://doi.org/10.1037/1089-2680.2.3.271

Gross, J. J. (2008). Emotion regulation. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotion regulation* (pp. 3–24). Guilford Press.

Gross, J. J. (2015). *Handbook of emotion regulation* (2nd ed). Guilford Press.

Gross, J. J., & Jazaieri, H. (2014). Emotion, emotion regulation, and psychopathology: An affective science perspective. *Clinical Psychological Science*, *2*(4), 387–401. https://doi.org/10.1177/2167702614536164

Gyurak, A., Gross, J. J., & Etkin, A. (2011). Explicit and implicit emotion regulation: A dual-process framework. *Cognition & Emotion*, *25*(3), 400–412. https://doi.org/10.1080/02699931.2010.544160

Hammer, C. A., & Ferrari, J. R. (2002). Differential incidence of procrastination between blue and white-collar workers. *Current Psychology*, *21*(4), 333–338. https://doi.org/10.1007/s12144-002-1022-y

Harriott, J., & Ferrari, J. R. (1996). Prevalence of procrastination among samples of adults. *Psychological Reports*, *78*(2), 611–616. https://doi.org/10.2466/pr0.1996.78.2.611

Hayat, A. A., Jahanian, M., Bazrafcan, L., & Shokrpour, N. (2020). Prevalence of academic procrastination among medical students and its relationship with their academic achievement. *Shiraz E-Medical Journal*, *21*(7). https://doi.org/10.5812/semj.96049

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd edition). New York: The Guilford Press.

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456–470. https://doi.org/10.1037/0022-3514.60.3.456

Jadidi, F., Mohammadkhani, S., & Tajrishi, K. Z. (2011). Perfectionism and academic procrastination. *Procedia - Social and Behavioral Sciences*, *30*, 534–537. https://doi.org/10.1016/j.sbspro.2011.10.104

Kandemir, M. (2014). Reasons of academic procrastination: Self-regulation, academic self-efficacy, life satisfaction and demographics variables. *Procedia - Social and Behavioral Sciences*, *152*. https://doi.org/10.1016/j.sbspro.2014.09.179

Kaufman, E. A., Xia, M., Fosco, G., Yaptangco, M., Skidmore, C. R., & Crowell, S. E. (2015). The Difficulties in Emotion Regulation Scale – Short Form (DERS-SF): Validation and replication in adolescent and adult samples. *Journal of Psychopathology and Behavioral Assessment*, *38*(3), 443-455. https://doi.org/10.1007/s10862-015-9529-3

Klingsieck, K. B., Grund, A., Schmid, S., & Fries, S. (2013). Why students procrastinate: A qualitative approach. *Journal of College Student Development*, *54*(4), 397–412. https://doi.org/10.1353/csd.2013.0060

Kurtovic, A., Gabrijela, V., & Idzanovic, A. (2019). Predicting procrastination: The role of academic achievement, self-efficacy and perfectionism. *International Journal of Educational Psychology*, *8*(1), 1–26. https://doi.org/10.17583/ijep.2019.2993

Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (2017). The relationship between perfectionism and psychopathology: A meta-analysis. *Journal of Clinical Psychology*, *73*(10), 1301–1326. https://doi.org/10.1002/jclp.22435

Macedo, A., Marques, C., Quaresma, V., Soares, M. J., Amaral, A. P., Araújo, A. I., & Pereira, A. T. (2017). Are perfectionism cognitions and cognitive emotion regulation strategies mediators between perfectionism and psychological distress? *Personality and Individual Differences*, *119*, 46–51. https://doi.org/10.1016/j.paid.2017.06.032

Macedo, A., Soares, M. J., Amaral, A., Castro, J., Chaves, B., Bos, S., Marques, M., Maia, B., Nogueira, V., Madeira, N., Valente, J., Roque, C., & Pereira, A. (2014). Multidimensional Perfectionism Cognitions Inventory: Validation of the Portuguese version. In K. Kaniasty, K. A. Moore, S. Howard, & P. Buchwald (Coords.), *Stress and anxiety: applications to social and environmental threats, psychological well-being, occupational challenges, and developmental psychology* (pp. 107–114). Logos Verlag Berlin Gmbh.

Madigan, D. J. (2019). A meta-analysis of perfectionism and academic achievement. *Educational Psychology Review*, *31*(4), 967–989. https://doi.org/10.1007/s10648-019-09484-2

Malivoire, B. L., Kuo, J. R., & Antony, M. M. (2019). An examination of emotion dysregulation in maladaptive perfectionism. *Clinical Psychology Review*, *71*, 39–50. https://doi.org/10.1016/j.cpr.2019.04.006

Mansouri, K., Ashouri, A., Gharaei, B., & Farahani, H. (2022). The mediating role of fear of failure, self-compassion and intolerance of uncertainty in the relationship between academic procrastination and perfectionism. *Iranian Journal of Psychiatry and Clinical Psychology*, *28*(1). https://doi.org/10.32598/ijpcp.28.1.3706.1

Mohammadi Bytamar, J., Saed, O., & Khakpoor, S. (2020). Emotion regulation difficulties and academic procrastination. *Frontiers in Psychology*, *11*, 524588. https://doi.org/10.3389/fpsyg.2020.524588

Moreira, H., Gouveia, M. J., & Canavarro, M. C. (2020). A bifactor analysis of the Difficulties in Emotion Regulation Scale – Short Form (DERS-SF) in a sample of adolescents and adults. *Current Psychology*. https://doi.org/10.1007/s12144-019-00602-5

Ogai, Y. (2004). The relationship between two aspects of self-oriented perfectionism and self-evaluative depression. *The Japanese Journal of Psychology*, *75*(3), 199–206. https://doi.org/10.4992/jjpsy.75.199

Patrzek, J., Grunschel, C., & Fries, S. (2012). Academic procrastination: The perspective of university counsellors. *International Journal for the Advancement of Counselling*, *34*(3), 185–201. https://doi.org/10.1007/s10447-012-9150-z

Pereira, M., & Duarte, M. (2021, September 8-11). *Measuring procrastination: Psychometric properties of the European Portuguese versions of the Irrational Procrastination Scale (IPS) and the Pure Procrastination Scale (PPS)* [Poster presentation]. EABCT 2021 Congress, Belfast. https://eabct2021.org/

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Pychyl, T. A., & Sirois, F. M. (2016). Procrastination, emotion regulation, and well-being. In F. M. Sirois & T. A. Pychyl (Eds.), *Procrastination, health, and well-being* (pp. 163–188). Academic Press. https://doi.org/10.1016/B978-0-12-802862-9.00008-6

Rahimi, S., & Hall, N. C. (2021). Why are you waiting? Procrastination on academic tasks among undergraduate and graduate students. *Innovative Higher Education*, *46*(6), 759–776. https://doi.org/10.1007/s10755-021-09563-9

Rezaeisharif, A., Harangza, M., & Fathi, D. (2021). Investigating the mediating role of fear of failure and difficulty in regulating emotion in the relationship between negative perfectionism and academic procrastination. *Journal of School Psychology*, *10*(3), 49–64. https://doi.org/10.22098/jsp.2021.1342

Rice, K. G., Richardson, C. M. E., & Clark, D. (2012). Perfectionism, procrastination, and psychological distress. *Journal of Counseling Psychology,* *59*(2), 288–302. https://doi.org/10.1037/a0026643

Rothblum, E., Solomon, L., & Murakami, J. (1986). Affective, cognitive, and behavioral differences between high and low procrastinators. *Journal of Counseling Psychology, 33*, 387–394. https://doi.org/10.1037/0022-0167.33.4.387

Schouwenburg, H. C., & Lay, C. H. (1995). Trait procrastination and the Big-five factors of personality. *Personality and Individual Differences*, *18*(4), 481–490. https://doi.org/10.1016/0191-8869(94)00176-S

Schuenemann, L., Scherenberg, V., von Salisch, M., & Eckert, M. (2022). "I'll worry about it tomorrow" – Fostering emotion regulation skills to overcome procrastination. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.780675

Sirois, F., & Pychyl, T. (2013). Procrastination and the priority of short-term mood regulation: Consequences for future self. *Social and Personality Psychology Compass*, *7*(2), 115–127. https://doi.org/10.1111/spc3.12011

Sirois, F. M., Molnar, D. S., & Hirsch, J. K. (2017). A meta-analytic and conceptual update on the associations between procrastination and multidimensional perfectionism. *European Journal of Personality, 31*(2), 137–159. https://doi.org/10.1002/per.2098

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*. https://doi.org/10.1037/0033-2909.133.1.65

Steel, P. (2010). Arousal, avoidant and decisional procrastinators: Do they exist? *Personality and Individual Differences*, *48*(8), 926–934. https://doi.org/10.1016/j.paid.2010.02.025

Steel, P., & Klingsieck, K. B. (2016). Academic procrastination: Psychological antecedents revisited. *Australian Psychologist*, *51*(1), 36–46. https://doi.org/10.1111/ap.12173

Stoeber, J., Kobori, O., & Tanno, Y. (2010). The Multidimensional Perfectionism Cognitions Inventory–English (MPCI–E): Reliability, validity, and relationships with positive and negative affect. *Journal of Personality Assessment*, *92*(1), 16–25. https://doi.org/10.1080/00223890903379159

Tice, D. M., & Bratslavsky, E. (2000). Giving in to feel good: The place of emotion regulation in the context of general self-control. *Psychological Inquiry*, *11*(3), 149–159. https://doi.org/10.1207/S15327965PLI1103_03

Tice, D., Bratslavsky, E., & Baumeister, R. (2001). Emotional distress regulation takes precedence over impulse control: If you feel bad, do it! *Journal of Personality and Social Psychology*, *80*, 53–67. https://doi.org/10.1037/0022-3514.80.1.53

Uzun Ozer, B., O'Callaghan, J., Bokszczanin, A., Ederer, E., & Essau, C. (2014). Dynamic interplay of depression, perfectionism and self-regulation on procrastination. *British*

Journal of Guidance & Counselling, 42(3), 309–319. https://doi.org/10.1080/03069885.2014.896454

Valenzuela, R., Codina, N., Castillo, I., & Pestana, J. V. (2020). Young university students' academic self-regulation profiles and their associated procrastination: Autonomous functioning requires self-regulated operations. *Frontiers in Psychology*, *11*, 354. https://doi.org/10.3389/fpsyg.2020.00354

van Eerde, W. (2003). A meta-analytically derived nomological network of procrastination. *Personality and Individual Differences*, *35*(6), 1401–1418. https://doi.org/10.1016/S0191-8869(02)00358-6

Vois, D., & Damian, L. E. (2020). Perfectionism and emotion regulation in adolescents: A two-wave longitudinal study. *Personality and Individual Differences*, *156*, 109756. https://doi.org/10.1016/j.paid.2019.109756

Wang, Y., Gao, H., Sun, C., Liu, J., & Fan, X. (2021). Academic procrastination in college students: The role of self-leadership. *Personality and Individual Differences*, *178*, 110866. https://doi.org/10.1016/j.paid.2021.110866