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## Dimensions of Procrastination and Their Combined Impact on Academic Performance in Distance Education

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### ABSTRACT

**Background/Objective:** In the fusion of university 4.0 and Society 5.0, higher education institutions are innovating in teaching and research to integrate advanced technologies and foster key skills such as critical thinking and creativity, using augmented reality, virtual labs, and adaptive learning. This pedagogical redesign is complemented by a focus on the psychological dimensions of learning, particularly, the study of how personality (Conscientiousness) influences academic performance through multidimensional procrastination. **Method:** The sample for this study, purposively selected from freshmen at UNED (Spanish National Distance Education University), comprised 327 students. **Results:** The partial mediation of academic procrastination in the relationship between Conscientiousness and performance shows that students with high Conscientiousness can achieve good results, and that procrastination presents a multifaceted mediational relationship: The Poor Time Management factor does not affect performance, while Core Procrastination has a negative impact and Work Disconnection has a positive one. **Conclusions:** This study reveals that, while procrastination is generally seen as an obstacle, certain manifestations can have a positive impact on academic performance. This understanding of the relationship between Conscientiousness, procrastination, and performance underscores the importance of addressing student behaviors in university 4.0. By incorporating these perspectives into the development of their programs and teaching methods, universities can better prepare students for the demands of a technologically advanced and socially responsible society. This comprehensive approach, which balances technological innovations with emotional well-being and personal effectiveness, is crucial for forming professionals capable of leading in the promotion of a sustainable and technologically enriched future.

## Dimensiones de la Procrastinación y su Impacto Combinado en el Rendimiento Académico en la Educación a Distancia

### RESUMEN

**Antecedentes/Objetivo:** En la fusión de la universidad 4.0 y la Sociedad 5.0, las instituciones de educación superior están innovando en la enseñanza e investigación para integrar tecnologías avanzadas y fomentar habilidades clave como el pensamiento crítico y la creatividad, utilizando realidad aumentada, laboratorios virtuales y aprendizaje adaptativo. Este rediseño pedagógico se complementa con un enfoque en las dimensiones psicológicas del aprendizaje, particularmente, el estudio de cómo la personalidad (Responsabilidad) influye en el rendimiento académico a través de la procrastinación multidimensional. **Método:** La muestra para este estudio, seleccionada intencionalmente de estudiantes de primer año de la UNED (Universidad Nacional de Educación a Distancia de España), comprendió 327 estudiantes. **Resultados:** La mediación parcial de la procrastinación académica en la

#### Palabras clave:

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Responsabilidad

Dimensionalidad

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relación entre la Responsabilidad y el rendimiento académico muestra que los estudiantes con alta Responsabilidad pueden lograr buenos resultados, y que la procrastinación académica presenta una relación mediacional multifacética: el factor de Pobre Manejo del Tiempo no afecta al rendimiento, mientras que la Procrastinación Central tiene un impacto negativo y la Desconexión del Trabajo uno positivo. **Conclusiones:** Aunque generalmente se ve la procrastinación como un obstáculo, ciertas manifestaciones pueden tener un impacto positivo en el rendimiento académico. Esta comprensión de la relación entre la Responsabilidad, la procrastinación y el rendimiento subraya la importancia de abordar los comportamientos estudiantiles en la universidad 4.0. Al incorporar estas perspectivas en el desarrollo de sus programas y métodos de enseñanza, las universidades pueden preparar mejor a los estudiantes para las demandas de una sociedad tecnológicamente avanzada y socialmente responsable. Este enfoque integral, que equilibra las innovaciones tecnológicas con el bienestar emocional y la efectividad personal, es crucial para formar profesionales capaces de liderar en la promoción de un futuro sostenible y tecnológicamente enriquecido.

## Introduction

In the context of Society 5.0, universities play a pivotal role by adopting an educational approach that emphasizes well-being, sustainability, and the integration of advanced technologies. This strategy not only enhances the ability to comprehend and retain knowledge but also equips students to adeptly navigate the intricacies of human behavior and social and global interactions. By focusing on well-being within the academic environment, the relentless pursuit of productivity is mitigated, fostering curiosity and self-awareness. This approach lays the foundation for institutional policies that promote a deep understanding of ourselves, others, and the world.

Procrastination presents a significant challenge in this context, indicative of broader imbalances. Addressing it through a lens of well-being and sustainability leads to the development of strategies that encourage sustainable work and study habits, helping individuals recognize their personal styles and typical ways of interacting with their environment and its demands. This fosters an awareness of one's path toward personal and professional fulfillment, while cultivating a culture of sustainability that is vital for addressing the environmental and social challenges of the 21st century.

Given that the UNED (Spanish University of Education at Distance) is a public distance learning university, its role in the era of Society 5.0—where the full adoption of ICT is paramount—could be particularly significant. In a landscape where higher education is being transformed by digital technologies and the need to promote sustainability, UNED's experience and approach can offer valuable insights into tackling these challenges within the context of distance education. Moreover, UNED's involvement in preparing future leaders to meet the UN's Sustainable Development Goals aligns with the principles of Society 5.0, including inclusion, sustainability, and community engagement.

Procrastination is characterized by the voluntary delay of essential actions for achieving goals, despite awareness of the negative consequences that result from such delay (Klingsieck, 2013; Steel, 2007; Steel & Ferrari, 2013). Individuals who procrastinate encounter obstacles that hinder their ability to adhere to their plans, often resulting in delays or failure to complete tasks. Moreover, this behavior can manifest in different areas of life, such as in the academic sphere (e.g., not submitting an assignment on time), in the workplace (e.g., not meeting a deadline), or personally

(e.g., postponing house cleaning). Depending on its frequency or regularity, procrastination can have a negative impact on the achievement of personal goals.

Many reasons for procrastination have been described: fear of failure, fear of success, lack of motivation, difficulties in implementing action, self-sabotage, low self-efficacy, low self-esteem, among others. Ferrari (Ferrari et al., 2009) proposed the existence of three distinct types of procrastination: avoidant, decisional, and arousal-seeking. Avoidant procrastination is driven by an aversion to the task itself, leading individuals to delay tasks they find unpleasant or intimidating. Decisional procrastination occurs when individuals postpone making important decisions, often due to fear of making the wrong choice or facing the consequences of their decisions. Arousal-seeking procrastination, on the other hand, is characterized by individuals delaying tasks to seek the thrill of working under pressure, believing that this last-minute rush enhances their performance. Together, these types of procrastination provide a comprehensive framework for understanding the different motivations behind procrastinatory behaviors. Although Steel (Steel, 2010) was unable to replicate and has questioned the existence of these types of procrastination. Chu and Choi (Chu & Choi, 2005) found a profile of procrastinators who would similarly procrastinate intentionally and who would feel comfortable with the pressure and tension of last-minute submissions. They called this behavioral profile active procrastinators. However, it has been proposed to differentiate these two forms of postponement, such that “classic” procrastination has been linked, in its definition, to subjective discomfort (e.g., Steel, 2010) while active procrastination has been termed strategic delay, fundamentally based on the fact that it does not provoke the negative consequences that the former does.

Although procrastination is a phenomenon observed in various aspects of life (academic, health, sports and well-being, work, financial, etc.), it is in the academic context where it has been most intensively studied and has received the greatest attention from the scientific community. It is estimated that around 90% of students experience this tendency at some point in their academic life (Sommer & Haug, 2012). Approximately 70% of students report that they procrastinate on a regular basis (Klingsieck, 2013), while about half engage in this behavior persistently (Solomon & Rothblum, 1984).

Academic procrastination has been linked to high levels of stress and deterioration of overall well-being (Bu et al., 2021;

Johansson et al., 2023; Kaya & Erdem, 2021) as well as physical and emotional health (Bu et al., 2021; Johansson et al., 2023; Sirois, 2015; Tice & Baumeister, 1997). Specifically, many authors have presented evidence of the negative impact procrastination has on academic performance (Akpur, 2020; Kim & Seo, 2015), and how it encourages intentions to drop out of studies (Bäulke et al., 2018; Garzón & Gil, 2016; Grau & Minguillon, 2013; Michinov et al., 2011; Scheunemann et al., 2021). Furthermore, procrastination in this context is associated with beliefs of low self-efficacy (e.g., Michinov et al., 2011), anxiety, depression, and rumination (e.g., Scheunemann et al., 2021). These negative effects and consequences underscore the importance of deeply understanding this phenomenon and its implications in both the academic and personal spheres.

Several studies have explored the relationship between academic procrastination and performance, yielding sometimes contradictory results. Some research has identified a negative relationship, suggesting that students who exhibit procrastination behaviors achieve lower grades and have a lower likelihood of academic success (Akpur, 2020; Kim & Seo, 2015; Solomon & Rothblum, 1984; Steel et al., 2001; Tice & Baumeister, 1997). However, other studies have not established a clear relationship between procrastination and academic performance, and some have even suggested that procrastination can have positive effects on academic achievement (Brinthaupt & Chin, 2001; Chu & Choi, 2005). Such inconsistencies in the literature were corroborated by (Kim & Seo, 2015), through a meta-analysis. The authors concluded that there is a negative relationship between procrastination and performance; however, they highlighted methodological aspects that underlie the great heterogeneity of studies with inconsistent results. The variability in research outcomes has been attributed to various factors, primarily related to methodology. These include the level of studies analyzed, the diversity of instruments (such as the type of procrastination measured), the choice of performance indicators, and notably, the source of the data. Specifically, discrepancies were observed in that the relationship between performance and procrastination was not significant when the data were self-reported by the subjects themselves.

The study of habitual or chronic procrastination underscores the crucial importance of individual differences in this behavior, pointing to a significant relationship with personality traits (Pychyl & Flett, 2012). In this context, it's common to find studies that consider procrastination not only as a habit but as a persistent personality trait (Johnson & Bloom, 1995; Steel et al., 2001; Steel, 2007; van Eerde, 2004). Personality traits, which Hogan et al. (1997) define as stable patterns of thought, emotion, and behavior, are widely characterized using the Big Five Model, one of the most utilized frameworks in contemporary research. This model categorizes personality into five principal dimensions: Conscientiousness, Neuroticism, Agreeableness, Extraversion, and Openness to Experience (Costa & McCrae, 1992). Conscientiousness, encompassing traits such as organization and self-discipline, has been found to have a negative association with procrastination (Johnson & Bloom, 1995; Steel, 2007; Steel & Klingsieck, 2016; van Eerde, 2004; Watson, 2001a). Conversely, Neuroticism, characterized by a predisposition towards experiencing negative emotions, has shown a positive relationship with procrastination (van Eerde, 2004; Watson, 2001b). The associations between procrastination and other

personality traits, such as Openness to Experience, Agreeableness, and Extraversion, have shown to have a limited effect size or inconsistent results in the literature (Brinthaupt & Chin, 2001).

The study of variables affecting academic performance has gained importance in the search for effective strategies to improve teaching and learning processes. In distance education, personal variables related to self-management, motivation, and self-discipline assume greater relevance than in face-to-face education and play a specific role (Edisherashvili et al., 2021). In the context of face-to-face education, a series of contextual elements play a crucial role in guiding students' behavior towards learning, even for those with avoidant and evasive tendencies. Factors such as group influence, contextual cues, and learning events defined temporally and spatially significantly contribute to this process. In contrast, distance or online education is characterized by offering greater freedom and autonomy regarding how and when learning events occur (Andrade & Bunker, 2009). This leaves in the hands of the students the management of the initiation of study events, the use of resources, the organization of content, as well as the duration of study situations. All these self-management demands suggest that students must rely more extensively on personal resources to achieve orientation and direction towards learning goals.

Despite unanimous recognition of the complexity of procrastination, including emotional, cognitive, and behavioral components (Steel, 2007), studies often approach academic procrastination from a unidimensional perspective (Díaz-Morales, 2019). Sometimes, non-specific instruments are also used to measure this domain-dependent behavior (González-Brignardello et al., 2023). Moreover, studies frequently focus on samples of students from specific and restricted areas, such as psychology, medicine, statistics, nursing, etc. Studies analyzing the relationship between performance and procrastination at a general level with representative samples from all knowledge areas are scarce, leading to difficulties in generalizing the results.

Therefore, distance education represents an optimal scenario for exploring the interaction between personality traits and behaviors that hinder the execution of learning-directed actions, especially procrastination.

The current study aims to deepen the understanding of the underlying dynamics that can prevent or facilitate academic success, with a special emphasis on online learning environments. Given that self-regulation, autonomy management, and motivation play a critical role in these contexts, it seeks to explore how academic procrastination acts as a mediator in the relationship between personality traits (Big Five Model) and academic performance. The choice to focus on non-presence university environments is justified by the significantly high prevalence of procrastination in these settings, along with their growing and unstoppable development. Furthermore, the intention is to adopt a multidimensional approach to the measurement of procrastination, thereby allowing a more detailed exploration of its different facets and how these dimensions impact academic performance. This multidimensional approach aims to offer more precise and applicable insights for the development of effective intervention strategies.

The objectives of this study are as follows:

- a) To examine the predictive capability of personality traits and academic procrastination on academic performance.

- b) To explore the mediating role of academic procrastination in the relationship between personality traits and objectively measured performance
- c) To explore the differential influence of the dimensions of academic procrastination on performance.

## Method

### Participants

The sample for this study was purposively selected from freshmen at the UNED (Spanish National Distance Education) and consisted of a total of 327 students. Their average age was 34,8 years with a standard deviation of 9.3. Among these students, 56.3% were women. Regarding their prior education before entering university, the sample was distributed as follows: 40.0% came from university access courses for students over 25/45 years of age, 26.0% were admitted through university entrance exams, 17.4 % had a background in vocational training (equivalent to higher technical schools), 9.8 % already held a university degree, 6.1% had a bachelor's degree (three years) and 0.6 % held a Ph.D. All faculties and schools of the university were represented in the sample, with most students from Psychology, representing 39.1% of the sample, Geography and History comprising 14.1% of the participants and Economics accounting for 7.3% of the total. The remainder students were distributed across other faculties and schools. As for employment status: employed workers formed the largest group at 64.8%, followed by students who were 'unemployed' represented 10.7%, and 'only students' comprised 9.8 %. The remainder was distributed among other classifications: 'self-employed', 7.3%, 'unpaid domestic work', 4.9 %, and 'retired', 0.9% (1.5 % did not answer this question).

### Measure Instruments

#### *Multidimensional Academic Procrastination Scale – 15 (MAPS-15) (González-Brignardello & Sánchez-Elvira, 2023)*

This instrument contains 15 items and 3 dimensions: Core Procrastination (6 items), Poor Time Management (4 items) and Work Disconnection (5 items), all of them presented in a 5-point Likert response format measuring the degree of agreement with the proposed statements, with extreme values of *not at all* (1) and *completely* (5). The authors reported that the three-factor structure of the instrument showed omega ( $\omega$ ) indices of .84, .83 and .71 for each dimension, respectively. Some sample items from the scale are: “*I find it difficult to make the decision to start studying*” (Core Procrastination); “*I am always behind with my work*” (Poor Time Management) and “*I am always interrupting my work to smoke, have a coffee, walk around, chat with someone...*” (Work Disconnection).

#### *Big Five Inventory (BFI) (Benet-Martínez & John, 1998)*

This instrument contains 44 brief statements and five subscales: extraversion, agreeableness, conscientiousness, neuroticism, and openness. The inventory is a 5-point Likert scale ranging from *totally agree* to *totally disagree*. The following are some sample items from the inventory: “*I am talkative*”, “*I am open to new,*

*original ideas*”, “*I cause a lot of admiration in others*”. The reported average reliability of the inventory was adequate,  $\alpha = .77$ . For each dimension, the item average was calculated with the goal of facilitating comparability between the variables.

#### *Academic Performance (Grade Point Average, GPA)*

The GPA was calculated by considering the grade and credits of each subject (from the first or second quarter) presented for examination, and the number of subjects enrolled. The data were obtained from the university's student database.

The formula used was the sum of numerical grade obtained in each subject at the end of the course multiplied by its number of credits divided by the number of subjects enrolled, as this:  $GPA = (\sum(\text{Subject Grade} \times \text{Credits})) / (\text{Number of Subjects Enrolled})$ . This formula considers the relative importance of each subject based on its number of credits (weighting of each subject in the overall average) as well as the number of subjects enrolled. The grade obtained at the end of the course refers to the highest score achieved in either of the two calls that exist for each subject (ordinary and extraordinary).

Sociodemographic data (i.e., gender, age, academic level prior to university entrance, and employment) situation were requested through an ad hoc online questionnaire.

### Procedure

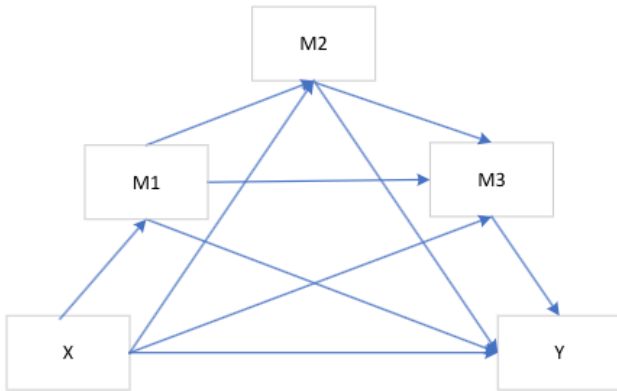
The participants of this study were first-year students at UNED who took part in an induction program in virtual communities. Data collection was carried out within the framework of an institutional longitudinal project aimed at identifying the needs of new students to prevent student dropout (“Red EngánchaTE I: Network for the development of an optimal study”). This study consisted of 6 online questionnaires, presented throughout the first academic year (October to July). The data reported in this article refer to 2 questionnaires, one presented in February (procrastination) and the second (personality) in April. Participation was entirely voluntary, and those who completed the full series of questionnaires received an elective credit. Students signed an informed consent, and the university's ethics committee authorized the project with Ref. 32-PSI.2022.

### Data Analysis

As a first step, the adequacy of the data for the type of analysis proposed in the study was verified. We began with a descriptive analysis of the study variables and their correlation matrix. The intercorrelations measured with Pearson's  $r$  coefficient, knowing that values  $> 0.80$  indicate collinearity problems (Franke, 2010).

A stepwise linear regression analysis was carried out with the aim of examining the influence, firstly, of the gender variable, as a control variable. Then, in the next step, the five personality variables from the Big Five model were introduced as predictors of academic performance, followed by the three dimensions of academic procrastination. In each step, the enter method was used for the calculation of the regression coefficients. The result of the regression model was evaluated in terms of homoscedasticity (through scatter plots of residuals \* fitted values), normality of residuals through Q-Q plots and histogram of residuals (knowing

**Figure 1**  
Statistical Diagram of Serial Multiple Mediator Model With Three Mediators



that with  $N > 30$ , the Central Limit Theorem applies, independence of errors (plot of residuals \* fitted values) and non-multicollinearity through VIF, whose value below the threshold of 5.0, and tolerance whose minimum value should be  $>.20$ . SPSS version 29 software was used.

Subsequently, a mediational analysis was conducted using the PROCESS 4.2 macro for SPSS, aimed at exploring how the personality variable, previously identified as significant, affects academic performance through procrastination. Hayes' Model 6 (Hayes, 2022) was applied to assess the indirect effects of the independent variable on the dependent one through several serial mediators. This analysis was based on 10,000 bootstrap re-samples, providing estimates of the indirect effect and the corresponding confidence intervals. A 95% confidence interval that does not include zero indicates a significant effect.

In this study, a sequence between X, M, and Y was established. It is posited that personality (factors of the Big Five Model) is antecedent to academic procrastination behavior (M), which, in turn, may have an impact, if appropriate, on academic performance outcomes (Y). Moreover, the order of the mediator variables (M1,

M2, and M3) responds to previous theoretical foundation (González-Brignardello & Sánchez-Elvira, 2023): the Poor Time Management variable (M1), related to the perception of poor time management capacity and, therefore, related to difficulty in organization and time dedication, is followed by the Work Disconnection variable (M2) that describes the inability to maintain and persist without interruptions in the study event (M2), ending this sequence of mediators with the Core Procrastination which encompasses more integrative descriptive aspects (cognitive and motivational) related to the subject's perception of their procrastination behaviors related to academic activities (M3) (see Figure 1). This multiple mediational model is shown in the following Figure 1.

**Results**

In this section, the main findings of the study are presented. The mean values, standard deviation, correlations among the various variables analyzed, as well as reliability measured through Cronbach's alpha, are detailed in Table 1.

Each of the independent variables exhibited a Variance Inflation Factor (VIF) value below the threshold of 5.0, ranging from 1.05 to 2.59. The minimum value for the Tolerance index was .39 reflecting an absence of strong correlations among the independent variables. Using the 0.80 benchmark to assess the strength of the correlations, as shown in Table 1, we can see that none of the variables were highly correlated. As a result, there were no multicollinearity concerns in our analysis.

**Regression Analysis**

In the hierarchical regression analysis, we explored the impact of personality and procrastination dimensions on the dependent variable, across three steps (Table 2).

In the first step, Gender was entered as a control variable. The findings showed that gender significantly influences the dependent variable right from the start, suggesting a noteworthy predictive power of gender on the outcome. The significant B coefficient for gender underscores its substantial role in explaining variations

**Table 1**  
Descriptive Statistics and Correlation Matrix

| Variable | M     | SD    | Age    | CP     | PTM   | WD     | Consci | Neurot | Agreea | Openn  | Extrav | GPA    |
|----------|-------|-------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|
| Gender   |       |       | -.22** | .03    | -.06  | .06    | -.08   | .24**  | .04    | .06    | .20**  | .18**  |
| Age      | 30.03 | 15.14 |        | -.17** | -.00  | -.15** | .17**  | -.14*  | .14*   | .10    | .01    | -.05   |
| CP       | 1.92  | 0.66  |        | .82    | .68** | .72**  | -.46** | .11*   | -.13*  | -.19** | -.05   | -.18** |
| PTM      | 2.79  | 0.83  |        |        | .83   | .67**  | -.47** | .10    | -.08   | -.17** | -.01   | -.17** |
| WD       | 2.19  | 0.72  |        |        |       | .79    | -.47** | .20**  | -.08   | -.11*  | -.03   | -.05   |
| Consci   | 3.75  | 0.60  |        |        |       |        | .80    | -.24** | .25**  | .27**  | .21**  | .16**  |
| Neurot   | 2.48  | 0.79  |        |        |       |        |        | .86    | -.31** | -.14*  | -.21** | .08    |
| Agreea   | 3.71  | 0.40  |        |        |       |        |        |        | .50    | .26**  | .25**  | -.04   |
| Openn    | 3.84  | 0.57  |        |        |       |        |        |        |        | .78    | .34**  | .08    |
| Extrav   | 3.40  | 0.74  |        |        |       |        |        |        |        |        | .83    | .01    |
| GPA      | 30.03 | 15.14 |        |        |       |        |        |        |        |        |        |        |

Note. CP: CoreProcrastination; PTM: Poor Time Management; WD: Work Disconnection; Consci: Conscientiousness; Neurot: Neuroticism; Agreea: Agreeableness; Openn: Openness to experience; Extrav: Extraversion; GPA: Academic Achievement; Gender: 53.6% females; and was codified as male -0.5 and female 0.5; N = 327; \*p < .05; \*\*p < .01. The Cronbach's alpha coefficient is displayed on the diagonal.

**Table 2**  
Stepwise Regression Results for Analyzing the Impact of Gender, Personality Traits, and Procrastination Multidimensional

| Variable                | Step 1 (Age+Gender) |      |      | Step 2 (+BFI) |      |       | Step 3 (+Procrast) |      |      | 95% CI         |
|-------------------------|---------------------|------|------|---------------|------|-------|--------------------|------|------|----------------|
|                         | B(SE)               | B    | p    | B(SE)         | B    | p     | B(SE)              | B    | p    |                |
| Gender                  | 5.32 (1.71)         | .18  | .002 | 5.62(1.79)    | .18  | .002  | 5.79(1.77)         | .19  | .001 | [2.31, 9.27]   |
| Age                     | -0.03 (0.09)        | -.02 | .763 | -0.06(0.09)   | -.04 | .500  | -0.05(0.09)        | -.03 | .571 | [-0.23, 0.13]  |
| Consci                  |                     |      |      | 5.19(1.47)    | .21  | <.001 | 4.26(1.67)         | .17  | .011 | [0.98, 7.53]   |
| Neurot                  |                     |      |      | 1.03(1.16)    | .05  | .375  | .52(1.15)          | .03  | .652 | [-1.75, 2.79]  |
| Agreea                  |                     |      |      | -2.90(2.26)   | -.08 | .200  | -3.35(2.23)        | -.09 | .135 | [-7.74, 1.04]  |
| Openn                   |                     |      |      | 1.80(1.58)    | .07  | .256  | 1.07(1.58)         | .04  | .499 | [-2.03, 4.16]  |
| Extrav                  |                     |      |      | -1.27(1.24)   | -.06 | .306  | -1.08(1.23)        | -.05 | .378 | [-3.50, 1.33]  |
| CP                      |                     |      |      |               |      |       | -4.78(1.96)        | -.21 | .015 | [-8.64, -0.92] |
| PTM                     |                     |      |      |               |      |       | -2.11(1.46)        | -.12 | .151 | [-4.99, 0.77]  |
| WD                      |                     |      |      |               |      |       | 4.88(1.77)         | .23  | .006 | [1.39, 8.37]   |
| <b>Model statistics</b> |                     |      |      |               |      |       |                    |      |      |                |
| R <sup>2</sup>          | .03                 |      |      | .08           |      |       | .12                |      |      |                |
| ΔR <sup>2</sup>         |                     |      |      | .05           |      |       | .04                |      |      |                |
| F                       | 5.37                |      |      | 3.94          |      |       | 4.09               |      |      |                |
| p                       | (.005)              |      |      | (.006)        |      |       | (.007)             |      |      |                |

Notes: Consci: Conscientiousness; Neurot: Neuroticism; Agreea: Agreeableness; Openn: Openness; Extrav: Extraversion.

in the dependent variable. On the contrary, age did not present a significant value in relation to performance. This early model demonstrates that gender alone accounts for a certain percentage of the variance in the outcome, highlighting the importance of considering gender differences in the predictive analysis.

In the second step, upon adding the BFI personality factors –Conscientiousness, Neuroticism, Agreeableness, Openness, Extraversion– to the model, the effect of gender remains significant and exhibits a slight increase. Conscientiousness shows a statistically significant positive association with the GPA, affirming its role as an important predictor. The inclusion of the BFI factors leads to an increase in R<sup>2</sup>, which enhances the model’s precision in terms of explaining the variance in the dependent variable.

In the third step of the analysis, the introduction of dimensions of procrastination into the model further refined its predictive capabilities. As expected, Core Procrastination exhibited a significant negative relationship with the outcome, suggesting an inverse effect where increased procrastination corresponds to a decrease in the outcome measure. Surprisingly, Work Disconnection had a significant positive effect, indicating that higher levels of Work Disconnection were associated with an increase in achievement. The comprehensive model, inclusive of these procrastination variables, now explains a greater proportion of variance in the dependent variable, demonstrating a more robust model with an enhanced explanatory power.

**Serial Multiple Mediation Analysis**

Once the regression outcome was obtained, indicating that Conscientiousness was the only personality factor with a significant effect on GPA, we proceeded to explore the potential mediating role of multidimensional procrastination in this relationship with gender as a covariate.

The Figure 2 shows the statistical diagram of the serial multiple mediator model with three dimensions of procrastination representing eight distinct effects of Conscientiousness on GPA, one direct effect (X → Y) and seven indirect effects: three passing through only a single mediator (X → M1 → Y; X → M2 → Y; X → M3 → Y), three passing through two mediators in series (X → M1 → M2 → Y; X → M1 → M3 → Y; X → M2 → M3 → Y), and one through all three mediators in series (X → M1 → M2 → M3 → Y).

The total effect of Conscientiousness on the outcome variable GPA was assessed first. The model summary indicates an R of .25, y R<sup>2</sup>= .064 explaining 6.4% of the variance in achievement, indicating that the model is significant (p < .000). This indicates that the model is significantly better than a model without predictors, suggesting that the included variables provide useful information for predicting the dependent variable GPA.

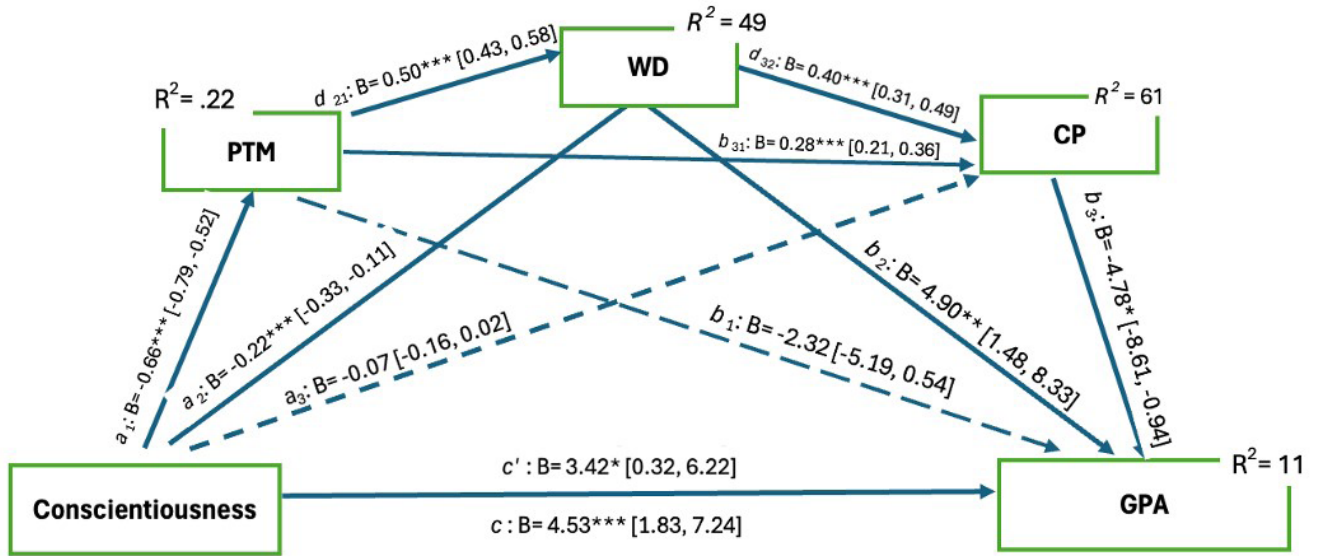
The coefficients for the predictors were as follows: for Conscientiousness (β = 4.53, SE = 1.37, p < .001) and for Gender (β = 5.55, SE = 1.68, p < .001), indicating significant relationships with the outcome. The standardized coefficients were .18 for Conscientiousness and .18 for Gender, reflecting their relative contributions to explaining the variance in GPA. The standardized coefficient of .18 indicates that, holding gender constant, an increase in Conscientiousness is associated with an increase in the dependent variable GPA. The standardized coefficient of .18 implies that, while controlling for Conscientiousness, gender significantly influences GPA.

Even though the model explains a modest fraction of the variance in GPA, the statistical significance of both the overall model and the individual predictors indicates that both Conscientiousness and Gender are relevant factors for understanding differences in achievement.

The direct effect of Conscientiousness on GPA, while controlling for the mediators, remained significant but was reduced,

**Figure 2**

Statistical Diagram of the Multiple Serial Mediation Model. Non Standardized B Coefficients, the Significance Level, and Confidence Interval are Shown



**Table 3**  
Effects of Conscientiousness on GPA: Total, Direct, and Indirect Effects Through Mediation

| Variables                                 | B          | SE   | t      | p      | 95% CI         |
|---|------------|------|--------|--------|----------------|
| Total Effect of Conscientiousness on GPA  | 4.53       | 1.37 | 3.30   | .001   | [1.83, 7.24]   |
| Direct Effect of Conscientiousness on GPA | 3.42       | 1.58 | 2.17   | .031   | [0.31, 6.52]   |
| Indirect Effects through Mediators        |            | B    | bootSE | 95% CI |                |
| Total                                     | 1.12       | .93  |        |        | [-0.71, 2.98]  |
| Ind1: Consc @ PTM @ GPA                   | 1.53       | .95  |        |        | [-0.28, 3.44]  |
| Ind2: Consc @ WD @ GPA                    | -1.09      | .49  |        |        | [-2.15, -0.24] |
| Ind3: Consc @ CP @ GPA                    | .35        | .27  |        |        | [-0.06, 1.00]  |
| Ind4: Consc @ PTM @ WD @ GPA              | -1.63      | .65  |        |        | [-3.00, -0.45] |
| Ind5: Consc @ PTM @ CP @ GPA              | .89        | .37  |        |        | [0.23, 1.70]   |
| Ind6: Consc @ WD @ CP @ GPA               | .42        | .21  |        |        | [0.09, 0.92]   |
| Ind7: Consc @ PTM @ WD @ CP @ GPA         | .63        | .27  |        |        | [0.17, 1.22]   |
| Summary Model                             |            |      |        |        |                |
| R <sup>2</sup>                            | 6.4        |      |        |        |                |
| F   | 7.31 <.001 |      |        |        |                |

Note. Ind = Indirect Effect; Consc = Conscientiousness; PTM = Poor Time Management; WD = Work Disconnection; CP = Core Procrastination; GPA = Academic Achievement; SE = Standard Error.

demonstrating a standardized direct effect of .14. This reduction in effect size upon the inclusion of the mediators suggests partial mediation; that is, the presence of a significant direct effect after including the mediators indicates partial mediation. This means that while Poor Time Management, Work Disconnection, and Core Procrastination account for part of the effect of Conscientiousness on GPA, Conscientiousness also has a direct impact on GPA.

Tests for interaction effects between the independent variable Conscientiousness and mediators Poor Time Management, Work Disconnection, and Core Procrastination did not reveal significant

moderation effects ( $p > .05$  for all), suggesting that the mediating relationships between Conscientiousness and GPA are consistent across different levels of the mediators.

Although the total indirect effect did not reach statistical significance (CI includes zero) (Table 3), there are specific mediation paths that did. The specific and significant positive mediation paths were to Ind5: Poor Time Management → Core Procrastination → GPA, Ind6: Work Disconnection → Core Procrastination → GPA, Ind7: Poor Time Management → Work Disconnection → Core Procrastination → GPA. The specific and significant negative

mediation paths were through Ind2: Work Disconnection → GPA, and Ind4: Work Disconnection → Core Procrastination → GPA. The magnitude and direction of these effects are substantiated by their respective bootstrap confidence intervals, indicating the statistical reliability of these findings.

The mediation analysis reveals a complex interplay of indirect effects through which Conscientiousness impacts GPA. Significant positive indirect effects suggest that certain mediators enhance the influence of Conscientiousness on GPA, while significant negative indirect effects indicate mediators that diminish this influence. The presence of both significant positive and negative indirect pathways underscores the nuanced role of these mediators in the overall relationship between Conscientiousness and GPA. This intricate pattern of mediation highlights the importance of considering multiple pathways to fully understand the impact of Conscientiousness on GPA. The final model incorporating all mediators and covariates, accounted for 10.19% of the variance in GPA.

### Discussion

The results of this study underscore the importance of non-cognitive constructs, specifically personality and procrastination, in academic performance within distance education.

Conscientiousness emerged as the only trait from the Big Five Model that showed significant predictive value for performance, measured through target and weighted GPA. This indicates that individuals with high levels of Conscientiousness tend to achieve better academic outcomes, a finding supported by extensive previous literature (Noftle & Robins, 2007; Vedel, 2014; Vedel & Poropat, 2017). The key to understanding this association lies in the components of Conscientiousness, such as responsibility, organization, self-discipline, and effort, which, when applied to the educational field, enhance dedication to study and improve academic performance.

The partial mediation of procrastination in the relationship between Conscientiousness and GPA acquires additional complexity when considering the three distinct dimensions of procrastination, each with a differential impact on academic performance. This phenomenon underscores that, even in the presence of tendencies to procrastinate, students with high levels of Conscientiousness can still achieve good academic results, although not at their maximum potential. While one dimension was shown to be neutral (Poor Time Management), not significantly affecting the GPA, the other two presented contrasting effects: one with a negative influence and the other positive. This scenario suggests that the relationship between Conscientiousness and academic performance, mediated by procrastination, is not unidirectional but multifaceted.

The dimension of procrastination that exerts a negative effect (Core Procrastination) can partially mitigate the positive impact of Conscientiousness on GPA, reflecting how the tendency to postpone can undermine an individual's ability to reach their full academic potential; a concept widely supported by literature in the area (Kim & Seo, 2015; Steel, 2007; van Eerde, 2004).

On the other hand, the dimension with a positive impact (Work Disconnection) introduces the possibility that certain aspects of procrastination, perhaps by offering necessary breaks or by fostering efficiency under pressure, can complement the qualities

of Conscientiousness, facilitating performance under certain circumstances. This result is unexpected, on one hand, but on the other, it reopens the old debate about functional procrastination; that which may not cause harm (Abramowski, 2018; Chu & Choi, 2005).

Is Work Disconnection a necessary detachment that allows for the renewal of energy and motivation?

Undoubtedly, this result requires further research to clarify the conceptual boundaries of Work Disconnection as well as its behavior in relation to other variables, for example, more emotional ones. In the field of organizational psychology, disconnection has attracted the interest of researchers (Donahue et al., 2012; Sonnentag et al., 2022). Future studies are necessary to address the complexity of relationships between variables associated with both academic performance and academic procrastination, using innovative methodologies such as network analysis (e.g., Molero et al., 2023). These methodologies could help to unveil how various factors of academic procrastination are integrated within a broader network of related variables, thereby providing a wider context and a better understanding of the structure of the interactions.

This three-dimensional dynamic of procrastination emphasizes the need for a nuanced educational strategy, one that not only recognizes Conscientiousness as a predictor of academic success but also considers how different facets of procrastination can interplay to influence this success in complex ways. Thus, effectively addressing academic performance involves not only enhancing Conscientiousness but also skillfully navigating the various currents of procrastination to maximize each student's educational potential.

This study faces limitations that must be considered when interpreting its results. Firstly, it does not take into account the different facets integrated into each factor of the Big Five Model; nor does it consider the areas of study, which could conceal differences in the relationships between personality and performance according to the areas of study, as reported by (Vedel et al., 2015). The authors found that taking this into account, complex patterns of relationship emerged, with conscientiousness and openness being the facets with the best predictors of GPA in some areas but not in others. Secondly, its focus on Conscientiousness as a global construct, without breaking it down into its underlying facets, prevents a detailed understanding of how those specific facets influence the relationship between procrastination and academic performance. Previous research has suggested that Conscientiousness comprises various dimensions, such as diligence, caution, and self-discipline, which may have differentiated impacts on behavior and performance (Costa & McCrae, 1992). By not analyzing these dimensions, the opportunity to identify which aspects of Conscientiousness contribute more significantly to academic performance and how they interact with procrastination is lost. Future research could benefit from a more granular approach that considers the individual facets of Conscientiousness, thereby providing a more complete understanding of its role in academic success. Another limitation of this study is that the assessment of Conscientiousness and procrastination was conducted through self-reports, while other variables were measured objectively. Although the use of self-reports is common in psychological research to explore internal constructs such as personality traits and procrastinatory behaviors, this method can introduce biases of social desirability and self-perception that affect the accuracy of the collected data.



By delving deeper into the relationship between personality, procrastination, and performance, educators and instructional designers are empowered to develop more impactful online courses that consider these critical factors. This understanding enables the implementation of targeted interventions such as reminders, intermediate deadlines, and various strategies aimed at mitigating procrastination. These measures can be particularly effective in tailoring the learning experience to individual student needs, accommodating diverse learning styles and personality traits. Furthermore, integrating psychological insights into educational practices not only enhances student engagement and performance but also contributes to the personal development of learners by fostering better time management and self-regulation skills. As a result, this approach holds the potential to significantly improve educational outcomes in distance learning environments, making it a valuable strategy for institutions aiming to adapt to the demands of the University 4.0 era.

### Conclusions

This study offers valuable insights into how Conscientiousness, academic procrastination, and performance are related in distance education settings. However, the limitations pointed out underscore the need for future research to adopt more detailed and diversified methodologies. This includes the analysis of specific facets of personality traits and the use of personality and procrastination assessments conducted by external sources. It is crucial to highlight the importance of examining procrastination in a multidimensional manner. By doing so, not only is its complexity recognized, but also underlying processes are revealed and emerge that help enrich our understanding of the phenomenon.

### References

- Abramowski, A. (2018). Is procrastination all that "bad"? A qualitative study of academic procrastination and self-worth in postgraduate university students. *Journal of Prevention & Intervention in the Community*, 46(2), 158-170. <https://doi.org/10.1080/10852352.2016.1198168>
- Akpur, U. (2020). The effect of procrastination on academic achievement: A meta-analysis study. *International Journal of Educational Methodology*, 6(4), 481-690. <https://doi.org/10.12973/ijem.6.4.681>
- Andrade, M. S., & Bunker, E. L. (2009). A model for self-regulated distance language learning. *Distance Education*, 30(1), 47-61. <https://doi.org/10.1080/01587910902845956>
- Bäulke, L., Eckerlein, N., & Dresel, M. (2018). Interrelations between motivational regulation, procrastination and college dropout intentions. *Unterrichtswissenschaft*, 46(4), 461-479. <https://doi.org/10.1007/s42010-018-0029-5>
- Benet-Martínez, V., & John, O. P. (1998). Los Cinco Grandes across cultures and ethnic groups: Multitrait multimethod analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology*, 75, 729-750. <https://doi.org/10.1037/0022-3514.75.3.729>
- Brinthaup, T. M., & Shin, C. M. (2001). The relationship of academic cramming to flow experience. *College Student Journal*, 35(3), 457-471.
- Bu, X., Wu, L., & Wang, H. (2021). Impact of college students' academic procrastination on subjective well-being. *Social Behavior and Personality*, 49(7), 1-13. <http://dx.doi.org/10.2224/sbp.9858>
- Chu, A. H. C., & Choi, J. N. (2005). Rethinking procrastination: Positive effects of «Active» procrastination behavior on attitudes and performance. *Journal of Social Psychology*, 145(3), 245-264. <https://doi.org/10.3200/SOCP.145.3.245-264>
- Costa, P. T., & McCrae, R. R. (1992). Normal personality assessment in clinical practice: The NEO Personality Inventory. *Psychological Assessment*, 4(1), 5-13. <https://doi.org/10.1037/1040-3590.4.1.5>
- Díaz-Morales, J. F. (2019). Procrastinación: Una revisión de su medida y sus correlatos. *Revista Iberoamericana de Diagnóstico y Evaluación - e Avaliação Psicológica*, 51(2), 43-60. <https://doi.org/10.21865/RIDEP51.2.04>
- Donahue, E. G., Forest, J., Vallerand, R. J., Lemyre, P., Crevier-Braud, L., & Bergeron, É. (2012). Passion for work and emotional exhaustion: The mediating role of rumination and recovery. *Applied Psychology: Health and Well-Being*, 4(3), 341-368. <https://doi.org/10.1111/j.1758-0854.2012.01078.x>
- Edisherashvili, N., Saks, K., Pedaste, M., & Leijen, Ä. (2021). Supporting self-regulated learning in distance learning contexts at higher education level: Systematic literature review. *Frontiers in Psychology*, 12. Article 792422. <https://doi.org/10.3389/fpsyg.2021.792422>
- Ferrari, J., Uzun Ozer, B., & Demir, A. (2009). Chronic procrastination among Turkish adults: Exploring decisional, avoidant, and arousal styles. *Journal of Social Psychology*, 149, 402-408. <https://doi.org/10.3200/SOCP.149.3.402-408>
- Franke, G.R. (2010). Multicollinearity. In Wiley International Encyclopedia of Marketing (eds J. Sheth and N. Malhotra). <https://doi.org/10.1002/9781444316568.wiem02066>
- Garzón A., & Gil, J. (2016). El papel de la procrastinación académica como factor de la deserción universitaria. *Revista Complutense de Educación*, 28(1), 307-324. [https://doi.org/10.5209/rev\\_RCED.2017.v28.n1.49682](https://doi.org/10.5209/rev_RCED.2017.v28.n1.49682)
- González-Brignardello, M. P., & Sánchez-Elvira, Á. (2023). Dimensional structure of MAPS-15: Validation of the Multidimensional Academic Procrastination Scale. *International Journal of Environmental Research and Public Health*, 20(4), Article 3201. <https://doi.org/10.3390/ijerph20043201>
- González-Brignardello, M. P., Sánchez-Elvira, A., & López-González, M. Á. (2023). Academic procrastination in children and adolescents: A scoping review. *Children*, 10(6), Article 6. <https://doi.org/10.3390/children10061016>
- Grau, J., & Minguillon, J. (2013). When procrastination leads to dropping out: Analysing students at risk. *eLearn Center Research Paper Series*, 63-74.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.
- Hogan, R., Johnson, J., & Briggs, S. (1997). *Handbook of personality psychology*. Academic Press.
- Johansson, F., Rozental, A., Edlund, K., Côté, P., Sundberg, T., Onell, C., Rudman, A., & Skillgate, E. (2023). Associations between procrastination and subsequent health outcomes among university students in Sweden. *JAMA Network Open*, 6(1), e2249346. <https://doi.org/10.1001/jamanetworkopen.2022.49346>
- Johnson, J. L., & Bloom, A. M. (1995). An analysis of the contribution of the five factors of personality to variance in academic procrastination. *Personality and Individual Differences*, 18(1), 127-133. [https://doi.org/10.1016/0191-8869\(94\)00109-6](https://doi.org/10.1016/0191-8869(94)00109-6)
- Kaya, M., & Erdem, C. (2021). Students' well-being and academic achievement: A meta-analysis study. *Child Indicators Research*, 14(5), 1743-1767. <https://doi.org/10.1007/s12187-021-09821-4>

- Kim, K. R., & Seo, E. H. (2015). The relationship between procrastination and academic performance: A meta-analysis. *Personality and Individual Differences, 82*, 26-33. <https://doi.org/10.1016/j.paid.2015.02.038>
- Klingsieck, K. B. (2013). Procrastination: When good things don't come to those who wait. *European Psychologist, 18*(1), 24-34. <https://doi.org/10.1027/1016-9040/a000138>
- Michinov, N., Brunot, S., Le Bohec, O., Juhel, J., & Delaval, M. (2011). Procrastination, participation, and performance in online learning environments. *Computers & Education, 56*(1), 243-252. <https://doi.org/10.1016/j.compedu.2010.07.025>
- Molero, M. M., Pérez-Fuentes, M. C., Martos, Á., Pino, R. M., & Gázquez, J. J. (2023). Network analysis of emotional symptoms and their relationship with different types of cybervictimization. *European Journal of Psychology Applied to Legal Context, 15*(1), 23-32. <https://doi.org/10.5093/ejpalc2023a3>
- Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology, 93*(1), 116-130. <https://doi.org/10.1037/0022-3514.93.1.116>
- Pychyl, T. A., & Flett, G. L. (2012). Procrastination and self-regulatory failure: An introduction to the special issue. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 30*(4), 203-212. <https://doi.org/10.1007/s10942-012-0149-5>
- Scheunemann, A., Schnettler, T., Bobe, J., Fries, S., & Grunschel, C. (2021). A longitudinal analysis of the reciprocal relationship between academic procrastination, study satisfaction, and dropout intentions in higher education. *European Journal of Psychology of Education, 37*, 1141-1164. <https://doi.org/10.1007/s10212-021-00571-z>
- Sirois, F. M. (2015). Is procrastination a vulnerability factor for hypertension and cardiovascular disease? Testing an extension of the procrastination-health model. *Journal of Behavioral Medicine, 38*(3), 578-589. <https://doi.org/10.1007/s10865-015-9629-2>
- Solomon, L. J., & Rothblum, E. D. (1984). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology, 31*(4), 503-509. <https://doi.org/10.1037/0022-0167.31.4.503>
- Sommer, L., & Haug, M. (2012). What influences implementation intentions in an academic learning context—The roles of goal intentions, procrastination, and experience. *International Journal of Higher Education, 1*(1), 32-61. eric.
- Sonnentag, S., Cheng, B. H., & Parker, S. L. (2022). Recovery from work: Advancing the field toward the future. *Annual Review of Organizational Psychology and Organizational Behavior, 9*(1), 33-60. <https://doi.org/10.1146/annurev-orgpsych-012420-091355>
- Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin, 133*(1), 65-94. <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., Brothen, T., & Wambach, C. (2001). Procrastination and personality, performance, and mood. *Personality and Individual Differences, 30*(1), 95-106. [https://doi.org/10.1016/S0191-8869\(00\)00013-1](https://doi.org/10.1016/S0191-8869(00)00013-1)
- Steel, P., & Ferrari, J. R. (2013). Sex, education and procrastination: An epidemiological study of procrastinators' characteristics from a global sample: Sex, education and procrastination. *European Journal of Personality, 27*(1), 51-58. <https://doi.org/10.1002/per.1851>
- Steel, P., & Klingsieck, K. B. (2016). Academic procrastination: Psychological antecedents revisited. *Australian Psychologist, 51*(1), 36-46. <https://doi.org/10.1111/ap.12173>
- Tice, D. M., & Baumeister, R. F. (1997). Longitudinal study of procrastination, performance, stress, and health: The costs and benefits of dawdling. *Psychological Science, 8*(6), 454-458. <https://doi.org/10.1111/j.1467-9280.1997.tb00460.x>
- van Eerde, W. (2004). Procrastination in academic settings and the Big Five Model of personality: A meta-analysis. In H. C. Schouwenburg, C. H. Lay, T. A. Pychyl, & J. R. Ferrari (Eds.), *Counseling the procrastinator in academic settings* (pp. 29-40). American Psychological Association. <https://doi.org/10.1037/10808-003>
- Vedel, A. (2014). The Big Five and tertiary academic performance: A systematic review and meta-analysis. *Personality and Individual Differences, 71*, 66-76. <https://doi.org/10.1016/j.paid.2014.07.011>
- Vedel, A., Poropat, A.E. (2017). Personality and Academic Performance. In: Zeigler-Hill, V., Shackelford, T. (eds) *Encyclopedia of Personality and Individual Differences*. Springer, Cham. [https://doi.org/10.1007/978-3-319-28099-8\\_989-1](https://doi.org/10.1007/978-3-319-28099-8_989-1)
- Vedel, A., Thomsen, D. K., & Larsen, L. (2015). Personality, academic majors and performance: Revealing complex patterns. *Personality and Individual Differences, 85*, 69-76. <https://doi.org/10.1016/j.paid.2015.04.030>
- Watson, D. C. (2001a). Procrastination and the five-factor model: A facet level analysis. *Personality and Individual Differences, 30*(1), 149-158. [https://doi.org/10.1016/S0191-8869\(00\)00019-2](https://doi.org/10.1016/S0191-8869(00)00019-2)
- Watson, D. C. (2001b). Procrastination and the five-factor model: A facet level analysis. *Personality and Individual Differences, 30*(1), 149-158. [https://doi.org/10.1016/S0191-8869\(00\)00019-2](https://doi.org/10.1016/S0191-8869(00)00019-2)

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