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Diferencias de género en la influencia de la personalidad sobre la procrastinación académica en estudiantes universitarios peruanos

Sergio Dominguez-Lara; Rony Prada-Chapoñan; Rodrigo Moreta-Herrera

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Resumen

El objetivo del presente estudio fue determinar la existencia de diferencias entre hombres y mujeres en cuanto a la influencia de las dimensiones de personalidad sobre la procrastinación académica en 986 alumnos de entre 16 y 40 años (69.8 % mujeres; $M_{edad} = 20.81$ años) de distintas carreras profesionales de dos universidades ubicadas en Lima. Para esto, se administró la Escala de Procrastinación Académica (EPA) y el Big Five Inventory-15P (BFI-15P), y se implementó un análisis de invarianza de un modelo regresión estructural. Los resultados mostraron que la personalidad explica un porcentaje significativo de la variabilidad de las dimensiones de la procrastinación académica, y que la influencia de las dimensiones responsabilidad y neuroticismo fue mayor en las mujeres. Se discuten las implicancias teóricas y prácticas de los hallazgos, así como la necesidad de fortalecer planes curriculares orientados a potenciar recursos y reducir los aspectos que podrían afectar negativamente la conducta académica del estudiante.

Palabras clave: procrastinación académica, personalidad, estudiantes universitarios, invarianza, regresión estructural.

Gender differences in the influence of personality on academic procrastination in Peruvian college students

Abstract

The objective of the present study was to analyze whether there are differences between men and women in terms of the influence of personality dimensions on academic procrastination. Participants were 986 students aged between 16 and 40 years (69.8 % women, $M_{age} = 20.81$ years), students of different professional careers from two universities located in Lima. The Academic Procrastination Scale (APS) and the Big Five Inventory-15P (BFI-15P) were the instruments administered. An invariance analysis of a structural regression model that indicates the influence of personality on academic procrastination was implemented. The results show that personality explains a significant percentage of the variability of the dimensions of academic procrastination. However, the influence of two dimensions, conscientiousness and neuroticism, is greater in women. The theoretical and practical implications of the findings are discussed, as well as the need to strengthen curricular plans aimed at enhancing resources and reducing those aspects that could negatively affect the academic behavior of the student.

Key words: academic procrastination, personality, college students, invariance, structural regression.

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Diferenças de gênero na influência da personalidade sobre a procrastinação acadêmica em estudantes universitários peruanos

Resumo

O objetivo do presente estudo foi determinar a existência de diferenças entre homens e mulheres com respeito à influência das dimensões de personalidade sobre a procrastinação acadêmica em 986 alunos de 16 a 40 anos (69,8 % mulheres; $M_{idade} = 20,81$ anos) de diferentes carreiras profissionais de duas universidades localizadas em Lima. Para isso, administrouse a Escala de Procrastinação Acadêmica (EPA) e o *Big Five Inventory-15P* (BFI-15P) e implementou-se uma análise de invariância de um modelo de regressão estrutural. Os resultados mostraram que a personalidade explica uma porcentagem significativa da variabilidade das dimensões da procrastinação acadêmica e que a influência das dimensões responsabilidade e neuroticismo foi maior nas mulheres. São discutidas as implicações teóricas e práticas das descobertas, bem como a necessidade de fortalecer planos curriculares orientados para potencializar recursos e reduzir os aspectos que poderiam afetar negativamente a conduta acadêmica do estudante.

Palavras-chave: procrastinação acadêmica, personalidade, estudantes universitários, invariância, regressão estrutural.

Introduction

Academic Procrastination (AP) refers to postponing activities at the school setting (Argumendo et al., 2005), and is defined as the action to voluntarily and needlessly delay carrying out activities for many reasons causing subjective malaise (Dominguez-Lara, 2016) and academic problems (Patrzek Sattler, van Veen, Grunschel, & Fries, 2015). In this sense, the person who procrastinates interacts in a reward game, a mix of tension and stress, due to the deferment, followed by the distension and reward after completing a task at the last minute (Alba & Hernández, 2013).

Two key components are estimated in AP: a) delaying activities; and b) academic self-regulation (Dominguez, Villegas, & Centeno, 2014; Moreta-Herrera & Durán-Rodríguez, 2018). The first one characterizes to a great extent the procrastinating behavior and shows actions carried out to prolong a course of action on the task at hand; and the second refers to goal-directed behavior and action planning (Steel, 2007), this being the most important element, since the core of the main procrastinating behavior is the failure of the self-regulation processes (Steel, 2007; Steel, & Ferrari, 2013).

AP prevalence is significant and diverse (e.g., Balkis, & Duru, 2009; Dominguez-Lara, 2017; Özer, 2011; Özer, Demir, & Ferrari, 2009), and among its consequences in the academic scope, the ones that stand out are: school problems (Furlan, Ferrero, & Gallart, 2014), low academic self-efficacy (Hen & Goroshit, 2014), psychological inflexibility (Glick & Orsillo, 2015), disruptive behavior (Patrzek et al., 2015), loss of motivation towards future tasks (Sánchez, 2010), and school desertion or permanence in the institution beyond the time expected to finish studies (Garzón, & Gil, 2017; Gómez, Ortiz & Perdomo, 2016; Rozental, & Carlbring, 2014). Also, at the personal level, AP is related to depression (Steel &

Klingsieck, 2015), stress, fatigue, guilt and anxiety (Schraw, Wadkins, & Olafson, 2007), among others.

Understanding the origin and maintenance of procrastinating behavior in university students is complex as there is a set of factors both *contextual and institutional* (e.g., vague instructions of teachers) as well as *personal* (personality traits) that affect its dynamics (Schraw et al., 2007). In this last group of factors, the vision of university work and the way academic activities are organized stand out (Patrzek et al., 2015).

From the point of view of the most relevant personal explanatory aspects of general and academic procrastination, the association with *personality* is included, specially from the big five factors model (5GF) (Steel & Klingsieck, 2016; Van Eerde, 2004). Thus, for example, in general procrastination, there is an inverse relation with the *conscientiousness* trait and a positive relation with *neuroticism* (Kim, Fernandez, & Terrier, 2017; Steel & Klingsieck, 2016; Van Eerde, 2004), just as with academic procrastination in a similar condition (Boysan & Kiral, 2017; Karatas & Bademcioglu, 2015; Zhou, 2018). There is also evidence of association with *extraversion*, although to a lesser degree, while with the *agreeableness* and *openness* traits its relation is virtually non-existent (Kim et al., 2017; Steel & Klingsieck, 2016). No Peruvian studies analyzing these two variables jointly were found.

The *Conscientiousness* trait is associated with respect for rules and self-control in order to attain objectives (John & Srivastava, 1999). It is coherent to think that the stronger its presence is, the fewer the failings in self-regulation leading people to develop secondary activities or delay them will be (Rahimi, Hall, & Pychyl, 2016). On the other hand, as AP is related to aversion and perception of high difficulty of tasks (Özer et al., 2009), it is understood that this situation is threatening to the procrastinator due to the predominantly negative affective base associated with *neuroticism* (Smith, Barstead, & Rubin, 2017).

Gender differences in procrastination and personality

The study of gender differences is one of the largest scope fields in current psychology. Many constructs have been studied from this perspective to give relevant information, like narcissism (Grijalva et al., 2015), social anxiety (Asher, Asnaani, & Aderka, 2017), school success (Spinatha, Eckert, & Steinmayr, 2014), academic engagement (Kessels, Heyder, Latsch, & Hannover, 2014), among others, including personality and procrastination.

Even though meta-analytical studies indicate that the association between procrastination and gender is significant (Steel, 2007; Van Eerde, 2004), such relation is virtually non-existent in terms of magnitude ($|r| < .10$). Nonetheless, discordant evidence has been found. Some studies point out that men procrastinate more than women (Khan, Arif, Noor, & Muneer, 2014; Olea & Olea, 2015; Özer et al., 2009; Steel & Ferrari, 2013), probably due to impulsiveness connections that characterize men (Strüber, Lück, & Roth, 2008), while other reports do not find such differences (Lai, Badayai, Chandrasekaran, Lee, & Kulasingam, 2015; Mahasneh, Bataineh, & Al-Zoubi, 2016; Moreta-Herrera, Durán-Rodríguez & Villegas-Villacrés, 2018). In the case of Peruvian university students, differences in terms of delaying activities were insignificant, but men showed less self-regulated academic behavior (Dominguez-Lara, & Campos-Uscanga, 2017).

On the other hand, the study of the differences and similarities between men and women with respect to 5GF has generated interesting evidence. *Neuroticism* appears with greater intensity in women at different stages of their lifespan: adolescence (De Bolle et al., 2015; Soto, John, Gosling, & Potter, 2011), adulthood (Schmitt, Realo, Voracek, & Allik, 2008; Weisberg, DeYoung, & Hirsh, 2011) and old age (Chapman, Duberstein, Sörensen, & Lyness, 2007). The *conscientiousness* factor is higher in women only in adolescence (De Bolle et al., 2015) as in adulthood there are similar scores in men and women (Chapman et al., 2007; Schmitt et al., 2008; Soto et al., 2011; Weisberg et al., 2011).

Agreeableness is another trait that has demonstrated differences in favor of women (De Bolle et al., 2015; Weisberg et al., 2011), and as for *extraversion*, some studies indicate similarities between genders (De Bolle et al., 2015; Chapman et al., 2007; Soto et al., 2011), but the perspective changes when cultural factors are analyzed: there is more extraversion in women from more egalitarian countries and is equivalent according to gender in countries with greater inequalities (Schmitt et al., 2008). Finally, *openness* does not show substantial differences between men and women (Chapman et al., 2007; Schmitt et al., 2008; Soto et al., 2011).

As for studies aimed at comparing Peruvian men and women regarding 5GF, differences in favor of women

only in *conscientiousness* and *agreeableness* were found in adulthood (Schmitt et al., 2008). There seems to be no consensus in university students, since whereas a study highlights that women significantly stand out in *neuroticism*, *extraversion* and *openness* factors (Niño de Guzmán, Calderón, & Cassaretto, 2003), another study mentions that women score higher in *extraversion*, *openness*, *agreeableness* and *conscientiousness* (Roa-Meggo, 2017).

Personality and academic procrastination: mediating role of gender

Even though personality differences between men and women may or not have an impact in procrastination (Nadeem, Malik, & Javaid, 2016), their *conscientiousness* and *neuroticism* dimensions have become important predictors. In this sense, differences between men and women in such factors could explain an important part of variability in AP. In addition, differences between men and women as for the influence of personality traits on AP is an emerging research field since today only a study has addressed the topic. In that work, using a structural equation approach, it was concluded that the influence of 5GF on AP is similar in Chinese men and women (Zhou, 2018). However, its arguments are based on general adjustment indicators of the proposed invariance analyses, and a comparative analysis of individual parameters was not conducted (e.g., regression coefficients), even though one of the dimensions (*extraversion*) showed a positive significant influence in the group of women and not in that of men.

In this sense, the purpose of the present explanatory study (Ato, López, & Benavente, 2013) was to analyze the influence of personality on AP in Peruvian university students and whether such influence differs according to gender.

For these reasons, and based on cumulative evidence on the relationship between personality and procrastination, it is necessary to consider gender as a moderating potential variable of procrastinating behavior of university students based on personality traits.

Method

Participants

The sample was obtained using a convenience sampling and consisted of 986 students (69.8% women) between 16 and 40 years old ($M_{age} = 20.81$; $DE_{age} = 2.78$), mostly single (93.8%) who are currently working (27.6%). Participants were recruited from four professional majors (18.1% Administration, 19.8% Accounting, 8% Tourism and 54.2%

Psychology) of two private universities and were studying between the second and eighth term when being evaluated.

Instruments

Academic Procrastination Scale (EPA; Busko, 1998). This scale evaluates two dimensions of AP, *Postponing activities* (three items) and *Academic Self-Regulation* (nine items) (Dominguez-Lara, 2016; Dominguez-Lara et al., 2014). The items show five response options (from *Never* to *Always*). The higher the score, the greater the presence of the evaluated construct. The version adapted to university students from Lima was used and has psychometric studies in university students where its internal structure of two factors is evident, as well as its favorable reliability indicators of scores and construct (Dominguez-Lara, 2016; Moreta-Herrera, 2018).

Big Five Inventory-15P (BFI-15P; Dominguez-Lara, & Merino-Soto, 2018a). It is a self-report measure that consists of 15 scaled items in a five-point ordinary format ranging from *I strongly disagree* to *I strongly agree*. The BFI-15 assesses 5GF (three items each): extraversion, agreeableness, responsibility, conscientiousness, neuroticism and openness. The interpretation of the scores is direct: the higher the score, the greater the presence of the evaluated dimension. The BFI-15P validation study gives an account of a structure with five differentiated factors under the ESEM (Study on Health and Medical Education) methodology and acceptable reliability indicators, considering that they are brief measures (Dominguez-Lara, & Merino-Soto, 2018a, in press).

Procedure

This study was developed within a large project approved by the *Instituto de Investigación de Psicología* of the first author's university, considering fulfillment of ethical requirements. The authorizations in the second institution were obtained through the corresponding Faculty authorities. The students were assessed in a usual class schedule with a previous verbal request for their collaboration, as well as through the signing of an informed consent, which specified that their participation was completely voluntary.

Data Analysis

Before the main analyses were conducted, descriptive statistics (mean and standard deviation) and dispersion statistics (asymmetry and kurtosis) of each of the study variables were reported. Likewise, data approximation to normality was assessed through the calculation of the *standardized asymmetry index* (IEA; Malgady, 2007), expecting magnitudes between .25 and .50. In addition,

the Kolmogorov-Smirnov-Lilliefors normality test was considered taking *the absolute most extreme difference* (D), in which values between 10 and .30 indicate a small distance to normality (Dominguez-Lara, in press).

Reliability of scores was estimated through α coefficient and *average inter-item correlation* (r_{ij} ; Clark, & Watson, 1995), where magnitudes between .15 and .20 are considered acceptable for broad constructs like assessed personality traits since α is influenced by the number of items. In order to give evidence on the equivalence of reliability estimation between men and women the W statistics was used, based on a method oriented to comparing α coefficients from instruments with few items (Feldt, & Kim, 2006; Merino-Soto, 2016).

After this, men and women were compared in the personality and AP dimensions, taking as reference the *d* of Cohen (1992), the effect magnitude measure: $\leq .20$, insignificant difference; between .20 and .50, small; between .50 and .80, moderate; and $> .80$, large.

Later, a structural regression model was analyzed on the personality influence of AP dimensions and its invariance between the groups. Before the structural model assessment itself, an oblique model was analyzed (which included dimensions of BFI-15 and of EPA) (Kline, 2016). For this purpose, the weighted least square mean and variance adjusted (WLSMV) estimation method was used based on polymorphic matrices because items are ordinal measures. The analyses were carried out with the *Mplus* version 7 software (Muthén, & Muthén, 1998–2015).

Initially, the oblique model viability was determined in each group through the adjustment index magnitude CFI $> .90$ (Blackburn, Donnelly, Logan, & Renwick, 2004; McDonald & Ho, 2002; Marsh, Hau, & Wen, 2004), and that the CI upper limit of RMSEA is not greater than .10 (West, Taylor, & Wu, 2012). The measurement invariance was gradually assessed following the specialized literature (Pendergast, von der Embse, Kilgus, & Eklund, 2017): configural invariance (equivalence of measurement model), metric invariance (equivalence of factor loadings) and strong (equivalence of thresholds); and compliance of each of them was valued using the variation in the adjustment index magnitude among models, specifically the CFI and RMSEA, based on Chen's proposal (2007) (to reject the measurement invariance if $\Delta CFI < -.01$ y $\Delta RMSEA \geq .01$) and of Meade, Johnson y Braddy (2008) (to reject if $\Delta CFI < -.002$, $\Delta RMSEA \geq .007$).

Once the measurement invariance was verified, the structural model was assessed in each group, indicating the variability amount of AP dimensions attributed to the personality dimensions by means of the determination coefficient (R^2). As there are no criteria to value it in the

structural equation model scope, breakpoints were used based on multiple regression: a R^2 of .02, .13 and .26 was qualified as small, medium and large, respectively (Ellis, 2010). Subsequently, the model's structural invariance was analyzed in two phases: 1) a multigroup factor analysis without equality restrictions in order to propose it as a base model (non-restricted model); and 2) to establish a model that restricts equality of all involved parameters (restricted model) (e.g. that *neuroticism* influences *delaying activities* is similar in both groups).

The two aforementioned models (restricted and non-restricted) were statistically compared considering variation in χ^2 (Asparouhov, & Muthén, 2006), and if such change is not significant, it is tentatively concluded that the model is invariant; i.e. that the influence of personality factors on AP is similar in both groups. Subsequently, modification indexes (MI; Sörbom, 1989) were analyzed associated to *misspecifications* (MS; Saris, Satorra, & Van der Veld, 2009) through a specialized module (Domínguez-Lara, & Merino-Soto, 2018b). In this sense, equality restrictions of those regression coefficients that show significantly high change indexes (IM) and that are also indicated as misspecifications (MS) were released and were again compared to the base model.

Results

Findings from basic descriptive aspects to invariance analysis of personality influence on academic procrastination according to gender are presented below.

Descriptive analysis

The studied variables show acceptable magnitudes of asymmetry and kurtosis, as well as a reasonable approach to univariate normality considering the IEA ($< .25$) and the D ($< .20$) (See Table 1).

Comparative and reliability analysis

As for the personality dimensions, women score higher in *neuroticism*, *agreeableness* and *conscientiousness* ($d > .20$). As for AP, men and women score higher in delaying activities and academic self-regulation ($d \geq .30$), respectively (See Table 1). Regarding reliability, the estimations reach acceptable magnitudes in most cases ($\alpha \approx .60$, and $r_{ij} > .20$), and were not significantly different among men and women ($p < .05$, in all cases).

Invariance of the structural regression model

Previous analysis of measurement invariance indicates that the adjustment of the oblique model was acceptable

in men and women separately (See section A, Table 2), that correlation among factors was moderate and construct reliability was acceptable for all variables (See Table 3), which allows for the analysis of measurement invariance. In this sense, once this procedure is carried out, variations in CFI and RMSEA indicate compliance of the metric, strong and configural invariance (See section B, Table 2).

Later, the structural model establishing the influence of personality dimensions on the AP (image 1) was analyzed separately in men and women, obtaining acceptable adjustment indexes (section C, Table 2). In this sense, it was observed that in the group of women the invariance (R^2) explained by the personality traits on delaying activities is significantly higher ($R^2_{men} = .038$, IC95% .000, .080; $R^2_{women} = .107$, IC95% .063, .151), although in both cases in *small* magnitude. As for *academic self-regulation* ($R^2_{men} = .628$, IC95% .561, .695; $R^2_{women} = .836$, IC95% .813, .859), influence in both groups is *great*. Individually, a positive significant influence of *extraversion*, *agreeableness* and *conscientiousness* and *openness* on the *academic self-regulation* in both groups (image 1) was observed. On the other hand, *conscientiousness*, *neuroticism* and *openness* have a significant influence on *delaying activities* in the group of women, and only *extraversion* in the group of men (See Figure 1).

Then, structural invariance was explored, i.e., if the regression coefficients of the proposed model are invariant between men and women, and after analyzing both models jointly, an acceptable adjustment was obtained (section C, Table 2). In this way, restricted and non-restricted models were compared, finding statistically significant differences between each other ($\Delta\chi^2/gl(11) = 27.892$, $p < .01$). In this case, MI were analyzed from the SSV model. Therefore, equality restriction was released to the influence of *neuroticism* on *delaying activities* ($\beta_{men} = .068$; $p = .415$; $\beta_{women} = .245$; $p < .001$) as such restriction was identified as misspecification ($MI_{men} = 58.040$; $MI_{women} = 58.053$). Even though the general adjustment improved ($\Delta\chi^2/gl(10) = 14.970$, $p = .133$), it was identified that the influence of *conscientiousness* on *academic self-regulation* ($\beta_{men} = .538$; $p < .001$; $\beta_{women} = .653$; $p < .001$) should be lax ($MI_{men} = 21.885$; $MI_{women} = 21.893$), and thus, the difference remained insignificant ($\Delta\chi^2/gl(9) = 9.599$, $p = .384$). Finally, equality restriction of the influence of *neuroticism* on the *academic self-regulation* ($\beta_{men} = .068$; $p = .347$; $\beta_{women} = -.108$; $p = .062$) was released ($MI_{men} = 11.000$; $MI_{women} = 10.987$), ending the analysis without a significant difference between the non-restricted model and the modified model ($\Delta\chi^2/gl(8) = 7.411$, $p = .493$). To sum up, the influence of *neuroticism* and *conscientiousness* on the AP is distinct according to gender.

Table 1.
Personality and Academic Procrastination Descriptive and Comparative Analysis

		Descriptive		Distribution		Normality			Reliability		W(p)
		M	SD	g ₁	g ₂	SSI	D	d	α	r _{ij}	
Personality											
E	Me	10.750	2.766	-.324	-.856	-.021	.149	.15	.665	.398	1.094 (.230)
	W	11.135	2.610	-.573	-.217	-.042	.130		.695	.432	
N	Me	7.633	2.650	.352	-.366	.025	.111	.34	.572	.308	1.055 (.330)
	W	8.575	2.773	.099	-.576	.006	.087		.596	.330	
A	Me	12.050	2.161	-.381	-.727	-.041	.137	.36	.748	.497	1.171 (.096)
	W	12.795	2.038	-1.141	1.749	-.137	.160		.706	.445	
C	Me	11.067	2.117	-.337	-.018	-.038	.145	.23	.651	.383	1.131 (.155)
	W	11.546	2.068	-.511	.261	-.060	.121		.607	.400	
O	Me	11.242	2.297	-.399	-.407	-.038	.138	.13	.570	.307	1.051 (.342)
	W	10.942	2.341	-.317	-.161	-.029	.102		.550	.289	
Academic Procrastination											
AP	Me	9.608	2.155	.218	.067	.023	.136	.30	.713	.453	1.092 (.234)
	W	8.896	2.467	.177	-.118	.015	.109		.738	.484	
AS	Me	29.225	4.981	-.254	-.097	-.005	.093	.33	.823	.341	1.083 (.226)
	W	30.911	5.072	-.138	.019	-.003	.060		.809	.320	

Note: M: Mean; SD: Standard Deviation; g₁: Skewness; g₂: Kurtosis; SSI: Standardized Skewness Index; D: absolute most extreme difference; d: Cohen's d; α: Cronbach's alpha; r_{ij}: average inter-item correlation; W(p): McDonald Coefficient; Me: men; W: women; E: Extraversion; N: Neuroticism; A: Agreeableness; C: Conscientiousness; O: Openness; PA: Activity Postponement; AA: Academic self-regulation

Table 2
Measurement and structural invariance analysis

	CFI	RMSEA (90% CI)	χ ² (df)	ΔCFI	ΔRMSEA	Δχ ² (df)
Section A: Oblique model						
Men	.923	.061 (.055, .068)	642.776 (303)***	-	-	-
Women	.922	.062 (.059, .066)	1114.952 (303)***	-	-	-
Section B: Measurement invariance						
Configural	.923	.061 (.057, .064)	1703.315 (607)***	-	-	-
Metrics	.932	.056 (.053, .059)	1593.307 (627)***	.009	-.005	-
strong	.928	.053 (.050, .057)	1746.600 (727)***	-.004	-.003	-
Section C: Structural Invariance						
SM: men	.923	.061 (.055, .068)	642.775 (303)***	-	-	-
SM: women	.922	.062 (.059, .066)	1114.952 (303)***	-	-	-
SM: unrestricted	.923	.061 (.057, .064)	1703.315 (607)***	-	-	-
SM: restricted	.931	.057 (.053, .060)	1597.796 (618)***	.008	-.004	27.892 (11)**

Note: CI: Confidence Interval; df: degrees of freedom; ***: p < .001; **: p < .01; SM: Structural Model

Table 3
Correlation between the latent variables of the structural model and Reliability Construct

	1	2	3	4	5	6	7
1. Extraversion	1	.551	.464	-.293	.364	-	-
2. Agreeableness	.781	1	.609	-.174	.442	-	-
3. Conscientiousness	.593	.625	1	-.140	.640	-	-
4. Neuroticism	-.305	-.150	-.176	1	.019	-	-
5. Openness	.451	.673	.659	.064	1	-	-
6. Postponement	-	-	-	-	-	1	-.513
7. Self-regulation	-	-	-	-	-	-.485	1
Construct Reliability (ω)							
Men	.733	.818	.734	.676	.630	.834	.860
Women	.730	.798	.703	.656	.610	.846	.849

Note: bellow diagonal: values in men; over diagonal: values in women

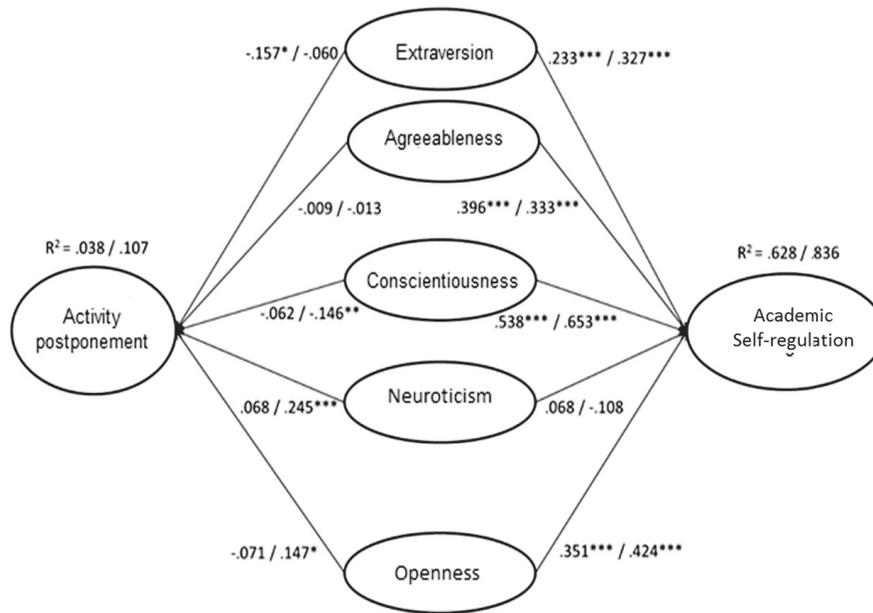


Figure 1. Structural model parameters in men (left) and women (right). $***p < .001$, $**p < .01$, $*p < .05$ (Inter-factorial correlations were omitted by simplicity).

Discussion

The purpose of this study was to analyze the influence of personality on AP, considering the possible gendered mediation.

The joint study of personality and procrastination is subject to a continuous process of development and analysis (e.g., Steel, 2007); however, today those variables, demographic and psychological, that help to better understand their relationship are important. *Gender* is one of them. In this respect, gender differences in the influence of personality

on AP is a recent topic (Zhou, 2018), and there is a need to deepen them in order to delimit teaching activities, considering personality as a stable element of the student. The study had three key moments: the comparative analysis, the structural model analysis (personality influence on AP) and the joint analysis of the structural model between men and women.

As for differences between men and women in personality traits, women scored higher in *neuroticism*, which is vastly documented in international literature (De Bolle et al., 2015; Chapman et al., 2007; Schmitt et al., 2008;

Soto et al., 2011; Weisberg et al., 2011), although the studies developed with Peruvian samples have shown divergent results, as one study indicates that women present higher neuroticism (Niño de Guzmán et al., 2003) while others do not (Roa-Meggo, 2017; Schmitt et al., 2008). Regarding the *agreeableness* trait, the results found in this study argued what has already been reported: women are kinder than men (De Bolle et al., 2015; Roa-Meggo, 2017; Schmitt et al., 2008; Weisberg et al., 2011). Lastly, in the *conscientiousness* trait there were few differences found in favor of women but are consistent with findings in Peruvian population (Roa-Meggo, 2017; Schmitt et al., 2008), although differ from international literature where there are no differences (Chapman et al., 2007; Schmitt et al., 2008; Soto et al., 2011; Weisberg et al., 2011).

Regarding AP, men were closer to a procrastinator profile (higher scores in delaying activities and lower scores in academic self-regulation) than women, which is consistent with the literature to the extent that it is more likely to observe a procrastinating and less self-regulated behavior in men than in women (Domínguez-Lara, & Campos-Uscanga, 2017; Khan et al., 2014; Olea, & Olea, 2015; Özer et al., 2009; Steel, & Ferrari, 2013).

As mentioned by Nadeem et al (2016), personality differences influence AP and can be quantified in its two dimensions. From its behavioral dimension (*delaying activities*), in the group of men there is only a significant but weak influence, *extraversion*, while in women the negative influence of *conscientiousness*, *neuroticism* and *openness* influencing positively stands out. This allows to infer that a particular profile of students who tend to delay is characterized by an unstable personality (*neuroticism*), which deter giving priority to activities (*conscientiousness*) and easily get distracted by novelties (*openness*). The negative relationship between procrastination and *conscientiousness* is consistent with what was stated by Rahmi et. al (2016). As for the second dimension, *academic self-regulation*, functional core of AP, there is greater consistency between men and women as the *extraversion*, *agreeableness*, *conscientiousness* and *openness* traits influence positively and to a great extent in both groups, which delimits more precisely a student profile.

In this sense, the student is expected to be sufficiently sociable (*extraversion*), as well as to possess appropriate social skills that facilitate interaction with others (*agreeableness*), to have planning and control over their activities (*conscientiousness*) and to show *openness* to new things, which would facilitate a greater presence of goal-oriented behaviors (Steel, 2007).

Generally, the results are consistent with the literature since the expected influence of *conscientiousness* and

neuroticism on AP can be appreciated (Boysan & Kiral, 2017; Karatas & Bademcioglu, 2015; Rahimi et al., 2016; Zhou, 2018). However, they disagree with studies indicating that there is no influence on procrastination due to the *agreeableness* and *openness* traits (Boysan & Kiral, 2017; Karatas & Bademcioglu, 2015; Kim et al., 2017; Steel & Klingsieck, 2016; Zhou, 2018).

However, in most studies men and women were analyzed separately, so statistical information is not provided to allow a more precise comparison of the role of gender in this influence. In this sense, the assessed structural model indicated that some personality traits have a distinct influence. To start with, in the comparative analysis it was mentioned that *neuroticism* negatively influenced the postponement of activities only in the group of women, and such premise was confirmed through an invariance analysis. Likewise, it was previously mentioned that all dimensions, except for *neuroticism*, significantly influence *academic self-regulation* in men and women, but the structural invariance analysis shows that *conscientiousness* and *neuroticism* influence *academic self-regulation*, to a greater extent in women, regardless of their magnitude.

To conclude, the significant presence of *neuroticism* and low *conscientiousness* constitute a major risk factor for women, at least in this sample. In other words, it is known that the *neuroticism* appears to a greater extent in women (De Bolle et al., 2015; Chapman et al., 2007; Schmitt et al., 2008; Soto et al., 2011; Weisberg et al., 2011), which would directly and inversely impact the *postponing of activities* and *academic self-regulation*, respectively, configuring the appearance of a risk profile (Domínguez-Lara, 2016).

Regarding the practical implications, the findings show the relevance of personality traits as risk or protective factors in procrastinating behavior, especially in the group of women, so that from these aspects plans for personality strengthening can be promoted in specific areas in order to minimize the negative impact of an inadequate personality development. In addition, given that the male sex is more prone to procrastination in the academic setting, this allows to foresee mechanisms for counteracting the negative impact that this behavior has on the processes of andragogical teaching and learning.

As for limitations of this study, it must be pointed out that the work was carried out with university students from private institutions in Metropolitan Lima City, and even though these results give relevant information on personality mechanics and academic procrastination, it is not possible to generalize the results because it is necessary to study other population segments including public education centers and other cities of the country and the region. Likewise, the

lack of equivalence of the groups classified by sex should be considered as there was greater participation of women.

It is recommended in the future to conduct studies on the mechanics of personality behavior, sex and academic procrastination in students from secondary school, university and technological institutions so that these results can be generalized, as well as to include some variables relevant to procrastination issues like self-efficacy or perfectionism, which can clarify this aspect even more. In the same way, it is convenient to consider age, since the procrastinating behavior progressively increases mainly in adolescence and decreases in adulthood (Rodríguez & Clariana, 2017), perhaps due to variations inherent to personality traits in the transit from one vital stage to another (Möttus, Allik, Hřebíčková, Kõõts-Ausmees & Realo, 2016).

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