EDUCATION & PSYCHOLOGY I+D+i
Research, Innovation and Solutions on-line®
Electronic Journal of Research in Educational Psychology
ejrep
Editorial EOS

Personality, Procrastination and Cheating in Students from different University Degree Programs

Mercè Clariana

Facultat de Psicologia, Universitat Autònoma de Barcelona, UAB, Barcelona

Spain

Correspondence: Mercè Clariana. Facultat de Psicologia, Universitat Autònoma de Barcelona, 08193 Barcelona, Spain. E-mail: merce.clariana@uab.cat

Abstract

Introduction. Personality, procrastination and dishonest behaviour in the classroom (or cheating) are variables that have been seen to have an important influence on learning. However, they have seldom been studied together and even less taking into account the gender of the student and their choice of degree course. This work analyses the variables for students in different faculties of the *Universitat Autònoma de Barcelona, UAB* (Spain) with the aim of identifying similarities and differences between the different qualifications, which may help teaching staff to plan their courses so that they are better adapted to the characteristics of their students.

Method. A total of 620 students from four faculties of the UAB (Engineering, Economics, Humanities and Education) volunteered to take part in the research. The answered an EDA questionnaire to evaluate procrastination and cheating and an S version of the *Big Five Inventory*, which measures personality. They also took part in an individual educational psychology interview which was used to contrast the results of the tests.

Results. The results confirm the idea that students on different university degree courses have distinct characteristics in terms of personality, procrastination and cheating. Among the peculiarities is the face that technology students got higher scores for emotional stability and the economics students scored higher in procrastination. Education students got higher scores in awareness and kindness than their peers on other degree courses. All of these were mediated by the gender of the student which is a significant factor to take into account in all the variables being studied.

Discussion. The results of this work expand and clarify those that existed to date and give us a clearer understanding of the relations that are established between the students' characteristics and the university degree courses they choose.

Keywords: choice of degree course, RIASEC, university degrees, personality dimensions, academic procrastination, dishonest behaviour in the classroom or cheating.

Received: 03/24/13 Initial acceptance: 07/02/13 Final acceptance: 07/08/13

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

Personalidad, Procrastinación y Conducta Deshonesta en Alumnado de distintos Grados Universitarios

Resumen

Introducción. La personalidad, la procrastinación y la conducta deshonesta en el aula (o *cheating*) son variables que han demostrado tener una influencia importante en el aprendizaje. Con todo, pocas veces se han estudiado todas juntas y menos teniendo también en cuenta el género del alumno y su elección de la carrera. Este trabajo analiza todas estas variables en estudiantes de distintas facultades de la *Universitat Autònoma de Barcelona, UAB* (Spain) con el objetivo de identificar diferencias y regularidades entre las titulaciones, que pueden ayudar a los responsables académicos a planificar los estudios para que puedan adaptarse mejor a las características de sus alumnos.

Método. Un total de 620 estudiantes de cuatro facultades de la UAB (Ingeniería, Economía, Humanidades y Educación) participaron voluntariamente en la investigación. Contestaron el cuestionario EDA, que evalúa procrastinación y cheating, y una versión S del *Big Five Inventory*, que mide personalidad. También participaron en una entrevista psicoeducativa individual que se utilizó para contrastar los resultados de los tests.

Resultados. Los resultados confirman la idea de que los alumnos de titulaciones universitarias distintas presentan características propias en cuanto a personalidad, procrastinación y cheating. Entre dichas peculiaridades cabe destacar que los alumnos de tecnología puntúan más alto en estabilidad emocional, y los de economía en procrastinación, y también que los estudiantes de educación obtienen notas más altas en consciencia y amabilidad que sus iguales de otras carreras. Todas estas relaciones están mediadas por el género del alumno que es una característica significativa a tener en cuenta en todas las variables estudiadas.

Discusión y Conclusiones. Los resultados de este trabajo amplían y matizan los que existían hasta ahora y permiten entender con más nitidez las relaciones que se establecen entre las características de los alumnos y las alumnas y las titulaciones que han elegido en la universidad.

Palabras Clave: elección de la carrera, RIASEC, grados universitarios, dimensiones de personalidad, procrastinación académica, conducta deshonesta en el aula o cheating.

Recibido: 24/03/13 *Aceptación inicial: 02/07/13* *Aceptación final: 08/07/13*

Introduction

The relationship between personality and choice of university degree has been studied for a number of years. Some authors (Holland, 1985) affirm that professional fulfillment results from a good match between one's personal characteristics and one's vocation, while others make the similar claim that personality traits and choice of university degree must be properly matched to ensure success, both in studies and in work life (Porter & Umbach, 2006).

As a result of these and other studies, it is now possible to establish a rather solid connection between personality and choice of university degree. The studies that have been published to date (Armstrong & Anthoney, 2009; DeFruyt & Mervielde, 1996; Donnay & Borgen, 1996; Tokar & Swanson, 1995) report significant relationships between the *Big Five* personality factors (Costa & McCrae, 1992; Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience) and the vocational dimensions of Holland's hexagon (Holland, 1997), represented by the RIASEC acronym (professions related to R = Reality, I = Investigation, A = Art, S = Society, E = Enterprise or C = Conventional activities). Figure 1 presents a summary diagram to help us understand the connections that have so far been established between personality and choice of university degree.

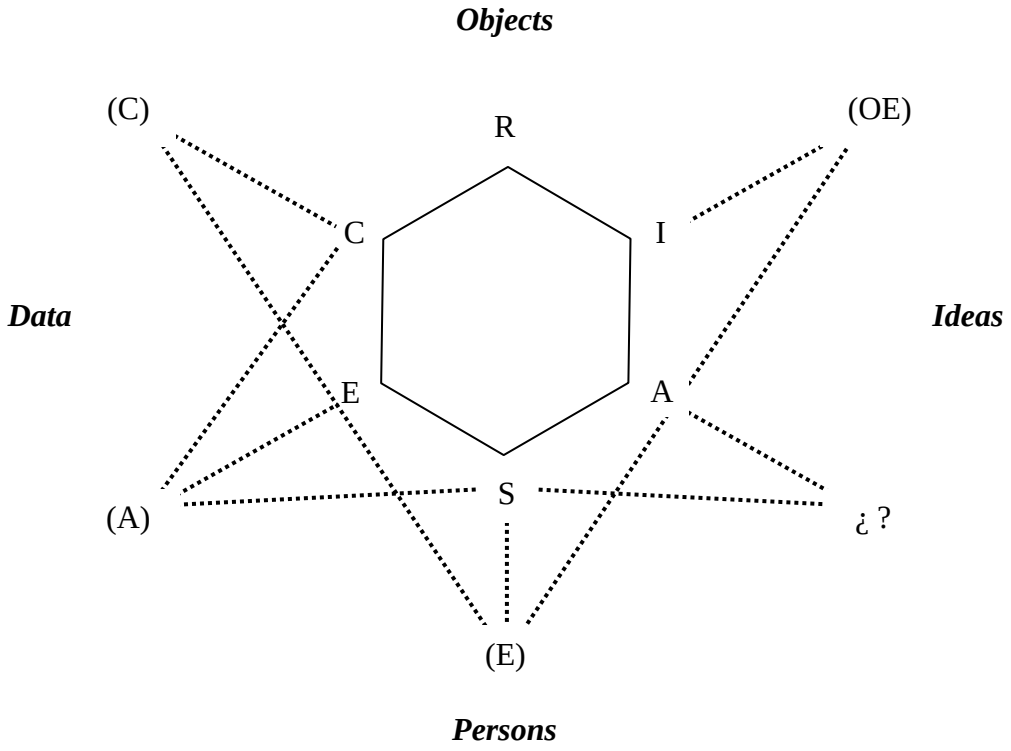

***Figure 1*. Hypothetical diagram of previously reported relationships between the *Big Five* personality dimensions (E) (A) (C) (N) (AM) and vocational preferences.**

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

Aside from the references cited here, other authors also support the relationships indicated in Figure 1 (for example, Hirschi, 2008), where the connection between personality and profession follows this pattern: extraverted persons are interested in jobs along the *artistic-social* axis (italics in the original text), those who score highly in openness to experience are attracted to occupations on the *realistic-investigation* axis, and finally, those with high scores in the personality dimension of agreeableness have professional interests along the *enterprising-conventional* axis.

Nonetheless, one can observe that Figure 1 is still incomplete. For example, it is unclear which personality dimension or dimensions are related to professional activities with a Realistic focus, partly because these vary greatly, including physics, law and biology (Holland, 1985). Investigation activities present the same issue, making them difficult to connect with specific personality traits or college degrees. Regarding this point, Amit and Sagiv (2009) affirm that "*...investigation in physics is perceived as similar to Realistic occupations whereas (investigation) in history is perceived as similar to Artistic occupations*" (p. 228). On another note, there are no data to date that indicate any specific relationship between *neuroticism* as a personality factor and preferences in the professional sphere. Some experts (Armstrong & Anthoney, 2009; DeFruyt & Mervielde, 1996) go so far as to say that this personality characteristic is not connected with any specific vocational tendency, while others (Hirschi, 2008; Tokar & Swanson, 1995; Tokar, Fischer & Subich, 1998) claim to have found a weak connection between *neuroticism* and artistic activities. Finally, some researchers do not ratify the relationships presented here, and make different connections, for example, *openness to experience* with enterprising occupations (Zhao & Seibert, 2004), a relationship that we have not found in any other study.

In addition to these results, other authors draw out significant differences between men and women in their choice of university degree. For example, Bethencourt and Cabrera Pérez (2008) found that male students give more importance to the real employment possibilities of a given specialization when they choose university subjects, while female students give more consideration to their purely vocational interests when making choices.

Elsewhere, other experts have investigated relationships found between personality dimensions and two characteristics that have significant influence on academic outcomes,

namely, *procrastination*, understood as the unnecessary delay in carrying out tasks (Schouwenburg & Lay, 1995), and *cheating*, described as the tendency to use unpermitted resources in order to meet requirements in the realm of formal education (McCabe, Trevino & Butterfield, 2001).

These two characteristics have a negative influence on learning. Procrastination, more common in boys than in girls (Steel, 2007; Steel & Ferrari, 2013) has been shown to cause low grades (Clariana, Gotzens, Badia & Cladellas, 2012; Wang & Englander, 2010), increase feelings of weakness and ineffectiveness in students who practice it (Surowiecki, 2010), and is closely associated with a lack of the personality dimension *conscientiousness* (r = -.68; MacCann, Duckworth & Roberts, 2009; Steel, 2007, 2010; Steel & Ferrari, 2013). This aspect must not be overlooked, because *conscientiousness* has been shown to have a positive correlation with good academic outcomes (Clariana, Gotzens & Badia, 2011; Meera, Karau, Schmeck & Avdic, 2011, and many others) and with high satisfaction in study (Helmke & Schrader, 2000; Kuensting & Lipowsky, 2011).

Research on *cheating* has also produced interesting data, both in relation to academic outcomes and to personality. First, hypotheses have been confirmed that male students are more dishonest than female students (Anderman & Murdock, 2007), that frequent cheaters are more impulsive than occasional cheaters (Anderman, Cupp & Lane, 2010) and they obtain lower scores, both in their grades (McCabe, 2009; McCabe, Trevino & Butterfield, 2001) and on the *Big Five* scale for *conscientiousness* (Day, Hudson, Dobies & Waris, 2011; Yardley, Domènech, Bates & Nelson 2009). Others have verified that procrastination and cheating go hand in hand, with reports of positive, moderately high correlations between the two variables (Clariana *et al*., 2012; Roig & DeTommaso, 1995). Finally, we have found a study that relates cheating in class with choice of university degree (Miller, Murdock, Anderman & Poindexter, 2007), concluding that the tendency to copy is more widespread in students of science and technology and less so in students of Social Sciences, Education or Humanities.

Lastly, some authors insist that both procrastination and cheating in the educational context are not only individual or personality characteristics, but to some extent also result from the type of instructional practices that students are subject to (Roberts, 2008; Schouwenburg, Lay, Pychyl & Ferrari, 2004). For example, it is clear that courses that do not help motivate the students, that are very demanding and do not offer adequate assistance, that

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

are led by incompetent teachers (Brent & Atkinson, 2011), or that give confusing instructions about how the work is to be done, lead to an increase in student procrastination (Ackerman & Gross, 2005, 2007). Along the same lines, formative, continuous assessment has been shown to significantly reduce procrastination and to increase student satisfaction in study (Clariana, Gotzens & Badia, 2012).

Despite these advances, there is little data for relating all these variables simultaneously: choice of university degree, personality, procrastination and cheating. Moreover, discrepancies in some of the results, as mentioned above, also justify revisiting this topic.

Objectives

Consequently, the objective of the present paper is to extend the existing theory in two directions:

1. Expand on and further specify the relationships found by other authors between personality and choice of university degree, as presented in Figure 1. More specifically, this study aims to incorporate gender differentiation into the model, as well as any personality dimensions that may be related to Holland's *Social* and *Artistic* vocational preferences, and also to relate the Holland dimensions to different university degrees.
2. Incorporate procrastination and academic cheating into the diagram shown in Figure 1. As some of the above studies confirm, both choice of university degree and personality characteristics may be helpful in determining where to incorporate these.

Method

Participants

Participating in the study were 620 student volunteers (59% women) from the *Universitat Autònoma de Barcelona* (UAB, Spain), a large public university. At the time of the study they were enrolled in different degree programs, which can be grouped according the faculty that offers that degree:

1. Engineering, including undergraduate degrees in technology, mathematics and computer science (n = 159; 27% women). This subsample will hereafter be referred to as TEC.

2. Economics and Business, a faculty that incorporates degree programs in business and legal sciences, such as business administration, journalism, law and sociology (n = 168; 60% women). This group of students will be called BUS (for *business*).
3. The Education Faculty, including undergraduate degrees in elementary education and in pedagogy (n = 149; 89% women). This part of the sample will be called EDU.
4. The Humanities Faculty, granting degrees in letters, geography and history (n = 144; 62% women). This subsample will be called HUM.

The students were Caucasians between 17 and 30 years of age. An age-related ANOVA of the four subsamples (F (3, 616) = 1.356, p = .255) did not detect any significant differences between them. However, the Chi square test, *V de Cramer* = (3, n = 620) = .443, p < .001, reveals that gender distribution between the four groups is very uneven.

Instruments

Educational-Psychological interview

Students participated in a psycho-educational interview led by a student in their final year of a Psychology degree. The interview collected information on the usual demographic variables (age, sex, any school years repeated, etc.), academic outcomes and satisfaction with academic learning, in the past and at the present time, and the student's individual characteristics relative to personality, procrastination and cheating. In cases where there were significant discrepancies in these variables when compared to test results, subjects were removed from the sample.

Questionnaires

In addition to the interview, students were asked to answer two questionnaires, ensuring them that their privacy would be maintained at all times. The questionnaires used in this study were:

1. The BFI10, which is a short (S) version of the *Big Five Inventory*, published by Rammstedt and John (2007). This scale uses 2 items per dimension, and our translation obtained Cronbach alpha indices between 0.62 (A) and 0.81 (E). In our study, in order to avoid confusion, neuroticism has been used in the inverse sense, such that high scores in N indicate good emotional stability. Examples of some items are: scale A: "I avoid having arguments with others"; scale E (item with inverse scoring), "I

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

don't like to talk about my personal things with other people". Direct scores for all personality scales range from 2 to 10 points.

2. The EDA, a factorial test with the two dimensions of procrastination and cheating, developed by Clariana and Martín (2008). *Procrastination* is assessed with 17 items obtaining an Alpha of .91 in the present study, and *cheating* is measured with 8 items, obtaining an Alpha of .82. Some of the statements are: for the *procrastination* scale, "I want to get down to studying, but I can't find the right moment to start"; for the *cheating* scale, "I copy the homework from a classmate or from Internet". Direct scores for procrastination range from 17 to 85 and for cheating from 8 to 40.

All the variables–personality E, A, C, N, O, procrastination and cheating—were measured using a 5-point Likert scale, where 5 signified "Totally agree" and 1 signified "Totally disagree". All the scales included some items with inverse scoring.

Statistical Analysis

For the statistical analyses, the faculty to which students belonged was used as a variable for indicating choice of university degree, with four categories: TEC, BUS, EDU and HUM. Student gender was also used as a categorical variable, with the two categories of male and female. Finally, the following seven variables were used as continuous variables: the five personality scales for E, A, C, N, O, procrastination and cheating.

Pearson correlations were calculated between the continuous variables to see whether they were similar to those previously reported by other authors. Next, a Student's *t* test for independent samples was applied, comparing means in order to check for any gender differences in the variables analyzed. Finally, given that the continuous variables are supposed to be related among themselves and were shown to be so in other studies, a multivariate MANOVA was applied in order to learn how choice of university degree relates to these variables.

Results

The correlations between the continuous variables are presented in Table 1. As expected, *conscientiousness* and *procrastination* are very closely related (r = -.752), as are *conscientiousness* and *cheating*, and *conscientiousness* and *grade point average*, although the

latter two correlations are not as strong (r = -.243 & r = .258, respectively). These results are in perfect agreement with prior studies. In addition, the data reveal certain unexpected relationships. The most notable is the inverse relationship between *agreeableness* as a personality factor and *procrastination* (r = -.107), also between *agreeableness* and *cheating* (r = -.155), and the direct relationship between *cheating* and *emotional stability* (r = .126).

***Table 1*. Pearson bivariate correlations between variables (n = 620)**

	Personality				
	E	A	C	N	O
Age	-.011	.002	.083*	.065	.072
Grade point average	-.009	-.009	.258**	-.077	.034
Procrastination	.011	-.107**	-.752**	.094	.021
Cheating	.084*	-.155**	-.243**	.126**	-.018

E = Extraversion, A = Agreeableness, C = Conscientiousness, N = Emotional stability, O = Openness to experience.

* The correlation is significant for $p < 0.05$

** The correlation is significant for $p < 0.01$

Next, results of the Student's *t* are presented in Table 2. All the continuous variables show significant gender differences, except for extraversion (E).

***Table 2*. Student's t test between genders, for the continuous variables (men: n=255; women: n=365)**

Continuous variables	gender	*Mean (sd)*	*t*	*p*
Extraversion	male	6.52 (2.16)	-.49	.625
	female	6.60 (1.92)		
Agreeableness	male	5.52 (1.62)	-2.98	.003
	female	5.59 (1.82)		
Conscientiousness	male	5.71 (1.99)	-.5.62	.000
	female	6.65 (2.06)		
Emotional stability	male	6.46 (1.83)	10.46	.000
	female	4.96 (1.69)		

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

Openness to experience	male	7.66 (1.71)	6.00	.000
	female	6.78 (1.97)		
Procrastination	male	51.23 (12.53)	5.44	.000
	female	45.48 (13.27)		
Cheating	male	20.31 (5.54)	3.80	.000
	female	18.41 (6.50)		

The MANOVA was calculated next. All results from Levene's test for the continuous variables attained a significance level greater than .05. This indicates that equality of variances can be assumed, therefore we used Wilks's *lambda* in this test, following Pallant (2010). Under this condition, the analysis gave a result of F (7, 610) = 5.821, $p < .001$, *eta* squared = .063. Since p is less than .05, we can state that significant differences were found among the four types of college degrees, TEC, BUS, EDU and HUM, for all variables analyzed (*E, A, C, N, O, procrastination* and *cheating*).

Since the Student's t revealed significant gender differences in the variables, two more MANOVAS were then applied, one for men (n = 255) and another for women (n = 365). Details of these tests are presented in Tables 3 and 4, where the significance level of Levene's test is greater than .05 for all the continuous variables except one, *openness to experience* in men ($p < .001$). Since this condition was fulfilled for the most part, equality of variances for both genders is again accepted for the variables studied here.

***Table 3*. MANOVA of the continuous variables for the four degree types: engineering TEC (n = 116), business BUS (n = 67), education EDU (n = 17) and humanities HUM (n = 55) – male gender**

Continuous variables	Levene significance	F (3, 251)	Significance	*Eta* squared	*Means*	
Extraversion	.359	1.288	.279	.015	TEC BUS EDU HUM	6.40 6.91 6.76 6.22
Agreeableness	.358	.346	.792	.004	TEC BUS EDU	5.62 5.51 5.41

					HUM 5.36
Conscientiousness	.597	.661	.577	.008	TEC 5.58 BUS 5.82 EDU 5.41 HUM 5.96
Emotional stability	.590	2.438	.065	.028	TEC 6.61* BUS 6.67* EDU 5.59 HUM 6.15
Openness to experience	.001	2.727	.045	.032	TEC 7.91* BUS 7.21 EDU 7.35 HUM 7.78*
Procrastination	.241	.575	.632	.007	TEC 51.23 BUS 52.45 EDU 52.00 HUM 49.51
Cheating	.574	.449	.718	.005	TEC 20.48 BUS 20.67 EDU 19.88 HUM 19.52

* Tukey subsets significantly high for $p < .05$

The MANOVA of men showed F (7, 245) = 1.267, p = .189, eta^2 = .035. The result is not significant, indicating that the variable *choice of university degree*, in the male gender, does not greatly affect the values of the factors studied here: *personality, procrastination* and *cheating*. The data presented in Table 3 confirm this finding. In fact, of the seven characteristics analyzed, significant differences are only found in two: *emotional stability* is higher in technology and economics students, and the value for *openness to experience* is significantly higher in students of technology and humanities. Furthermore, the *eta* value obtained indicates that the proportion of the continuous variables that can be explained by the categorical variable referring to *choice of university degree*, is frankly low in all cases, confirming what we have stated, that for the group of male students, relationships between *choice of university degree* on one hand, and *personality, procrastination* and *cheating,* on the other hand, are rather weak.

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

Table 4. **MANOVA of the continuous variables for the four degree types: engineering TEC (n = 43), business BUS (n = 101), education EDU (n = 132) and humanities HUM (n = 89) – Female gender**

Continuous variables	Levene significance	*F* (3, 251)	Significance	*Eta* squared	*Means*	
Extraversion	.788	.234	.872	.002	TEC BUS EDU HUM	6.51 6.58 6.70 6.51
Agreeableness	.280	2.387	.069	.019	TEC BUS EDU HUM	5.79 5.86 6.27* 5.64
Conscientiousness	.823	4.164	.006	.033	TEC BUS EDU HUM	6.74* 6.43 7.10* 6.18
Emotional stability	.187	2.997	.050	.020	TEC BUS EDU HUM	4.60 5.32* 4.81 4.97
Openness to experience	.503	7.211	.000	.057	TEC BUS EDU HUM	7.33* 6.57 6.36 7.37*
Procrastination	.151	3.515	.015	.028	TEC BUS EDU HUM	44.49 48.05* 42.84 46.94
Cheating	.067	.907	.438	.007	TEC BUS EDU HUM	18.57 19.19 17.90 18.30

* Tukey subsets significantly high for $p < .05$

On the other hand, the MANOVA for women gave F (7, 355) = 2.435, p <.001, *eta* squared = .046. In this case the result *is* significant and indicates many more differences than those found in the other gender. As can be observed in Table 4, there are many more variables in women that do obtain significantly different results as a function of the degree program in which the women are enrolled. The direction of the differences indicates that: female Education students have high scores in *agreeableness* and *conscientiousness*; technology

and humanities students surpass the others in *openness to experience*; in addition, female students of technology also have significantly higher scores in *conscientiousness*; and finally, female business and law students show a significantly higher result in both *emotional stability* and *procrastination*.

Lastly, *extraversion* did not turn out to be a differentiating variable for either men or women, with both groups in all degree programs showing similar results in this characteristic.

Discussion

The objective of the present study was to confirm and expand on the information about relationships that exist between *choice of university degree* based on the RIASEC model (Holland, 1985), the Big Five personality dimensions *E*, *A*, *C*, *N* and *O* (Costa & McCrae, 1992), *procrastination* and *cheating*.

First, it should be noted that some of the connections reported earlier have been replicated in the present study. This is the case of the high, negative correlation between *conscientiousness* and *procrastination*, which had been determined at r = -.68 (Steel, 2007) and now was found to be even higher, at r = -.75; of women's preference for degrees that involve working with people (education and humanities), of men's preference for occupations that involve relating to objects and things (technology and business) (Holland, 1997), confirmed in our case with the chi-square test; that the most timely students, those that least procrastinate, are students pursuing engineering degrees (Akinsola, Tella & Tella, 2007), even though in the present study we have not been able to demonstrate this claim for the male gender; also, along the same lines, that *agreeableness* and *conscientiousness* are related to professional activities of the Conventional and Social type (Armstrong & Anthoney, 2009; DeFruyt & Mervielde, 1996; Tokar & Swanson, 1995), since the present study shows that female students who obtain significantly higher scores on these scales are those who pursue degrees in Education and Technology (see Table 4, Factor C *Conscientiousness*).

On the other hand, some previously established relationships did not appear on this occasion, such as the tendency for extraverted persons to choose occupations related to business activities or to assisting others (DeFruyt & Mervielde, 1996; Hirschi, 2008; Tokar & Swanson, 1995); in our study *extraversion* was not significantly related to any other variable.

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

Similarly, the tendency to copy or cheat, which prior studies (Miller *et al*., 2007) had connected with degrees in science and technology, could not be confirmed in the present study (see Tables 3 and 4); in the present study, differences in this variable as a function of university degree were not significant, and furthermore they were in favor of business and law students, not those in science and technology.

Likewise, regarding *openness to experience*, we must state that we did not confirm what some authors have feared, that the current educational system produces scientists who have neither intelligence nor creativity, excluding imaginative pupils in order to avoid problems with rebellion and indiscipline, and supporting only those students with high scores in *conscientiousness* and *agreeableness*. According to Charlton (2009): "*Creativity is probably associated with moderately high levels of Eysenck's personality trait of 'psychoticism'. Psychoticism combines qualities such as selfishness, independence from group norms, impulsivity and sensation-seeking... But modern science selects for high conscientiousness and high agreeableness*..." (p. 237). Even though intuitively we might agree with this author, we must recognize that, fortunately, the data in Table 4 do not seem to support this affirmation with respect to social and legal sciences. Nonetheless, we would also note the significantly higher score in the technology area, at least in women, on the personality dimension *conscientiousness*.

We also failed to confirm other prior results (Lapan, Shaughnessy & Boggs, 1996) that claimed that more introverted subjects choose mathematics specialties, since in our case *extraversion* was not a differentiating variable in any of the degree programs analyzed. Neither did we ratify that students of science and technology are more prone to cheat (Miller *et al*., 2007); this tendency did not show significant differences between degree programs in our data, significant differences were found only between women and men.

Aside from what has already been mentioned, other interesting relationships appear in our study and are worth noting. On one hand, it seems that the men are more emotionally stable than the women, and those who present this characteristic choose degree programs mostly in engineering, economics and law. Female students enrolled in Education degree programs were significantly different from the rest of the male and female students, scoring higher in *agreeableness* and *conscientiousness*, two characteristics that are very much in line with their future profession. Finally, the results from economics and law students were noteworthy,

since neither the male nor the female students scored highly in *openness to experience* as a personality dimension, contrary to prior studies (Zhao & Seibert, 2004), and the male students in business, journalism and law were significantly higher in *procrastination*, above all the other groups, truly constituting a new finding in this study (see Tables 3 and 4).

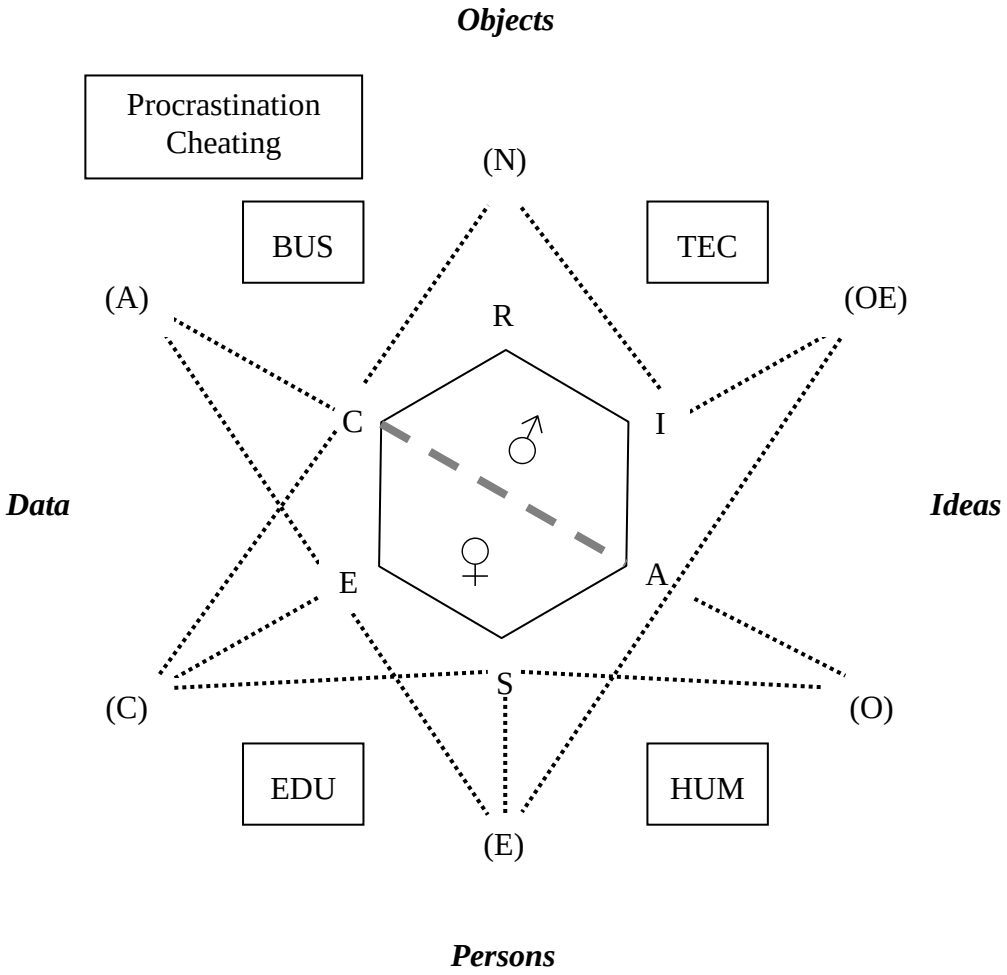

***Figure 2*. Corrected diagram, based on data from the present study, of the relationships between the Big Five personality dimensions (E) (A) (C) (N) (O), the Holland RIASEC vocational preferences, academic procrastination and cheating.**

Taken together, as represented in Figure 2, what seems really important in our results is the large gender gap that we have found in choice of university degree, in specific personality characteristics, and in *procrastination* and *cheating*. While it is true that gender differences have been exposed repeatedly in the history of psychology, in multiple variables and aspects (for example, Bethencourt & Cabrera Pérez, 2008; Bubany & Hanse, 2011; de la Fuente Arias, 2004; DeAndrea, Carpenter, Shulman & Levine, 2009; deBruin & Hilton, 2007; García Berbén, 2005; Kuensting & Lipowsky, 2011; as a few examples of more important studies in the sphere of education), we did not expect to find such an marked dissimilarity in the 21st

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030

century, with such a narrowly delimited sample of university students all from the same university and in the same age group. In fact, as we understand it, the results presented here define two markedly distinct types of students. On one hand are the men, with a tendency toward *procrastination* and *cheating*, also with high scores in *emotional stability*, who choose degree programs around the Holland dimensions of CRIA, such as economics, law and technology. On the other hand are the women, who are significantly less prone to procrastinate or cheat, who stand out in the personality dimensions of *agreeableness* and *conscientiousness*, and who prefer to study for degrees in the opposite part of the Holland hexagon, in other words, in the CESA dimensions, such as education and humanities. Despite this division, it should be noted that there is a substantial group of female students who are enrolled in business, journalism or law, who tend to share characteristics from both groups, since they present high *emotional stability* and also high scores in *procrastination*, just as their male peers (at thie time we find no other studies that confirm this statement, even though it is well established in the present study). Future investigations will no doubt monitor this subgroup that intersects both "masculine" and "feminine" academic qualities, to confirm whether, with the passage of time and accumulated experience, these women in business and in law and communications will lean more toward one set of characteristics (the male or the female set), or if they will become established as a new group of students with their own peculiarities.

Likewise, with a future perspective, we feel that personality traits, *procrastination* and *cheating* should be studied again with larger samples and with other university degrees, such as biology and art (obviously missing in the present study for reasons outside our control), so as to fill out the diagram we have presented in the Figures above. At some hypothetical time, when all the relationships are well established, with gender distinction if needed, professionals in academia will find it easier to personalize the educational process, an objective which is one of the greatest challenges in university education today.

Acknowledgments

The author is indebted to Nathalie Detmer, a student at the Westfälische Wilhelms-Universität Münster (Germany), for her assistance in compiling the bibliography and also for her enthusiasm and optimism in carrying out this study.

References

Ackerman, D. S. & Gross, B. L. (2005). My instructor made me do it: Task characteristics and procrastination. *Journal of Marketing Education, 27*, 5-13.

Ackerman, D. S. & Gross, B. L. (2007). I can start that JME manuscript next week, can't I? The task characteristics behind why faculty procrastinate. *Journal of Marketing Education, 29*, 97-110.

Akinsola, M. K., Tella, A. & Tella, A. (2007). Correlates of academic procrastination and mathematics achievement of university undergraduate students. *Eurasia Journal of Mathematics, Science, and Technology*, *3*(4), 363-370.

Amit, A. & Sagiv, L. (2009). Where have the investigative occupations gone?: Perceptions and misperceptions of occupations. *Journal of Career Assessment, 17*(2), 214-231. doi: 10.1177/1069072708329032

Anderman, E. M. & Murdoch, T. B. (2007). *Psychology of Academic Cheating*. London (UK): Elsevier.

Anderman, E. M., Cupp, P. K. & Lane, D. (2010). Psychology of Academic Cheating. *Journal of Experimental Education, 78*(1), 135-150.

Armstrong, P. I. & Anthoney, S. F. (2009). Personality facets and RIASEC interests: An integrated model. *Journal of Vocational Behavior, 75*, 346–359. doi: 10.1016/j.jvb.2009.05.004

Bethencourt, J. T. & Cabrera, L. (2008). Behavior of university students with respect to developing their career. *Electronic Journal of Research in Educational Psychology*, *6*(3), 623-640.

Brent, E. & Atkisson, C. (2011). Accounting for cheating: An Evolving Theory and Emergent Themes. *Research in Higher Education, 52* (6), 640-658. doi: 10.1007/s11162-010-9212-1

Bubany, S. T. & Hansen, J. C. (2011). Birth cohort change in the vocational interests of female and male college students. *Journal of Vocational Behavior, 78* (1), 59-67. doi: 10.1016/j.jvb.2010.08.002

Charlton, B. G. (2009). Why are modern scientists so dull? How science selects for perseverance and sociability at the expense of intelligence and creativity. *Medical Hypotheses, 72*(3), 237-243.

Clariana, M. & Martín, M. (2008). Escala de Demora Académica (EDA) [Academic Procrastination Scale]. *Revista de Psicología General & Aplicada, 61*(1), 37-51.

Clariana, M., Gotzens, C. & Badia, M. (2011). Continuous assessment in a large group of psychology undergraduates. *Electronic Journal of Research in Educational Psychology, 9*(1), 95-112.

Clariana, M., Gotzens, C. & Badia, M. (2012). *Evaluación formativa y procrastinación en la universidad*. [Formative assessment and procrastination at university.] Berlin: Lambert Academic Publishing LAP, Editorial Académica Española EAE.

Clariana, M., Gotzens, C., Badia, M. & Cladellas, R. (2012). Procrastination and cheating from secondary school to university. *Electronic Journal of Research in Educational Psychology, 10*(2), 737-754.

Costa, P. T. & McCrae, R. R. (1992). *NEO PI-R Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Day, N. E., Hudson, D., Dobies, P. R. & Waris, R. (2011). Student or situation? Personality and classroom context as predictors of attitudes about business school cheating. *Social Psychology of Education, 14*(2), 261-282.

de la Fuente, J. (2004). Recent perspectives in the study of motivation: the theoryof goal orientation. *Electronic Journal of Research in Educational Psychology, 2*(1), 35-62.

DeAndrea, D. C., Carpenter, C., Shulman, H. & Levine, T. R. (2009). The relationship between cheating behavior and sensation-seeking. *Personality and Individual Differences, 47*(8), 944-947. doi: 10.1016/j.paid.2009.07.021

deBruin, G. P. & Hilton, R. (2007). Examining the cheats: The role of conscientiousness and excitement seeking in academic dishonesty. *South African Journal of Psychology, 37*(1), 153-164.

DeFruyt, F. & Mervielde, I. (1996). Personality and interests as predictors of educational streaming and achievement. *European Journal of Personality, 10*, 405-425. doi: 0.1002/(SICI)1099-0984(199612)10:5<405::AID-PER255>3.0.CO;2-M

Donnay, D. A. D. & Borgen, F. H. (1996). Validity, structure, and content of the 1994 Strong Interest Inventory. *Journal of Counseling Psychology, 43*, 275-291. doi: 10.1037/0022-0167.43.3.275

García-Berbén, A. B. (2005). A study of approaches to learning in students of educational and school psychology. *Electronic Journal of Research in Educational Psychology, 3*(2), 109-126.

Helmke, A. & Schrader, F. W. (2000). Procrastination im Studium. Erscheinungsformen und motivationale Bedingungen. In K. P. Wild & U. Schiefele (Eds.), *Interesse und*

Lernmotivation. Untersuchungen zu Entwicklung, Förderung und Wirkung (pp. 207-225). Münster, GE: Waxmann.

Hirschi, A. (2008). Personality complexes in adolescence: Traits, interests, work values, and self-evaluations. *Personality and Individual Differences, 45*(8), 716-721. doi: 10.1016/j.paid.2008.07.018

Holland, J. L. (1985). *Vocational Preference Inventory Manual*. Odessa, FL: Psychological Assessment Resources.

Holland, J. L. (1997). *Making Vocational Choices: A Theory of Vocational Personalities and Work Environments*. Odessa, FL: Psychological Assessment Resources (3rd ed.).

Kuensting, J. & Lipowsky, F. (2011). Motivation for using a teacher education program and personality traits as predictors for study satisfaction and strategy use. *Zeitschrift fur Padagogische Psychologie, 25*(2), 105-114. doi: 10.1024/1010-0652/a000038

Lapan, R. T., Shaughnessy, P. & Boggs, K. (1996). Efficacy expectations and vocational interests as mediators between sex and choice of math/science college degrees: A longitudinal study. *Journal of Vocational Behavior, 49*, 277-291. doi: 10.1006/jvbe.1996.0044

MacCann, C., Duckworth, A. L. & Roberts, R. D. (2009). Empirical identification of the degree facets of conscientiousness. *Learning and Individual Differences, 19*(4), 451-458.

McCabe, D. L. (2009). Academic dishonesty in nursing schools: an empirical investigation. *Journal of Nursing Education, 48*(11), 614-623. doi: 10.3928/01484834-20090716-07

McCabe, D. L., Trevino, L. K. & Butterfield, K. D. (2001). Cheating in academic institutions: A decade of research. *Ethics & Behavior, 11*(3), 219-232. doi: 10.1207/S15327019EB1103_2

Meera, K., Karau, S. J., Schmeck, R. & Avdic, A. (2011). The Big Five personality traits, learning styles, and academic achievement. *Personality and Individual Differences, 51* (4), 472-477. doi: 10.1016/j.paid.2011.04.019

Miller, A., D., Murdock, T. B., Anderman, E. M. & Poindexter, A. L. (2007). Who are all these cheaters? Characteristics of academically dishonest students. In E. Anderman & T. B. Murdoch (Eds.), *Psychology of Academic Cheating* (cap 2, pp. 9-32). London, UK: Elsevier.

Pallant, J. (2010). *SPSS Survival Manual 4th edition*. New York, NY: Open University Press and McGraw-Hill education.

Porter, S. R. & Umbach, P. D. (2006). College degree choice: An analysis of the person environment fit. *Research in Higher Education, 47*(4), 429-449.

Rammstedt, B. & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality, 41,* 203-212. doi: 10.1016/j.jrp.2006.02.001

Roberts, T. S. (2008). *Student Plagiarism in an Online World*. New York (US): Information Science Reference.

Roig, M. & DeTommaso, L. (1995). Are college cheating and plagiarism related to academic procrastination? *Psychological Reports, 77*, 691-698.

Schouwenburg, H. C. & Lay, C. H. (1995). Trait procrastination and the Big-Five factors of personality. *Personality and Individual Differences, 18*, 481-490.

Schouwenburg, H. C., Lay, C. H., Pychyl, T. A. & Ferrari, J. R. (2004). *Counseling the Procrastinator in Academic Settings*. Washington DC (US): American Psychological Association APA.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin, 133*, 65-94. doi: 10.1037/0033-2909.133.1.65

Steel, P. (2010). Arousal, avoidant and decisional procrastinators: Do they exist? *Personality and Individual Differences, 48,* 826-934. doi: 10.1016/j.paid.2010.02.025

Steel, P. & Ferrari, J. R. (2013). Sex, education and procrastination: An epidemiological study of procrastinator's characteristics from a global sample. *European Journal of Personality, 27*(1), 51-58. doi: 10.1002/per.1851

Surowiecki, (2010). Later. *The New Yorker,* 11th October, http:/www.newyorker.com.

Tokar, D. M. & Swanson, J. L. (1995). Evaluation of the correspondence between Holland's vocational personality typology and the five-factor model of personality. *Journal of Vocational Behavior, 46*, 89-108. doi: 10.1006/jvbe.1995.1006

Tokar, D. M., Fischer, A. R. & Subich, L. M. (1998). Personality and vocational behavior: A selective review of the literature, 1993-1997. *Journal of Vocational Behavior, 53*, 115-153. doi: 10.1006/jvbe.1998.1660

Wang, Z. & Englander, F. (2010). A cross-disciplinary perspective on explaining student performance in introductory statistics. What is the relative impact of procrastination? *College Student Journal, 44*(2), 1-15. doi: 10.1006/drev.1996.0005

Yardley, J., Domènech, M., Bates, S. C. & Nelson, J. (2009). True confessions? Alumni's retrospective reports on undergraduate cheating behaviors. *Ethics & Behavior, 19*(1), 1-14.

Zhao, H. & Seibert, S. E. (2004). The big five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of Applied Psychology, 91*(2), 259-271. doi: 10.1037/0021-9010.91.2.259

Electronic Journal of Research in Educational Psychology, *11*(2), 451-472. ISSN: 1696-2095. 2013, no. 30
http://dx.doi.org/10.14204/ejrep.30.13030