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GOODBYE TO SEX EQUALITY. A NEW APPROACH TO RESEARCH ON SEX AND GENDER

(ADIÓS A LA IGUALDAD DE SEXOS. UNA NUEVA PERSPECTIVA EN LA INVESTIGACIÓN DE SEXO Y GÉNERO)

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RESUMEN

Este estudio se enmarca en una investigación más amplia, que se está realizando con estudiantes de Ecuador; y entre cuyos objetivos se persigue identificar claves culturales y socioeducativas que pueden sesgar el desarrollo vocacional y posterior elección profesional de mujeres y varones, en función de creencias, valores y esquemas existenciales basados en la desigualdad entre sexos. Se presentan los primeros datos de la fase exploratoria en diferencias de sexo y género en habilidades cognitivas y factores actitudinales de feminidad, masculinidad, sumisión y machismo, sobre una muestra de 1120 adolescentes, de ambos sexos, de 2º de Bachillerato (16-18 años) de centros educativos del Ecuador. Se ha aplicado el cuestionario IMAFE, (*Inventario Masculinidad-Feminidad*), y las ocho subpruebas del *Test de Aptitudes Diferenciales* (DAT). Se avanza la información derivada de las correlaciones entre los factores de IMAFE, entre cuatro subpruebas del DAT: razonamiento verbal (RV), razonamiento abstracto (RA), razonamiento espacial (RE) y cálculo (C), y entre las puntuaciones de ambos instrumentos. En estos primeros datos, cabe destacar que se ha encontrado coherencia con hallazgos de investigaciones actuales, referidos a perfiles de rasgos indiferenciados entre sexos en asociación a los distintos niveles de desarrollo socio-cultural. Esta última observación constituye un enfoque alternativo de aproximación a las cuestiones de género.

ABSTRACT

This study is part of wider research being conducted amongst school-age students in Ecuador, and one of the aims it pursues is to identify the cultural and socio-educational keys that may influence the vocational development and subsequent choice of career by both males and females, according to their beliefs, values and life experiences based on inequality between the sexes. Presentation is made of the initial data from the exploratory stage on differences of sex and gender in cognitive skills and attitudinal factors of femininity, masculinity, submission and male chauvinism, or machismo, involving a sample of 1120 adolescents (aged 16-18) of both sexes studying secondary education (2nd year of the bachillerato) at schools in Ecuador. Application has been made of the *Masculine-Feminine Personality Traits Inventory* (IMAFE) questionnaire, and the eight subtests of the *Differential Aptitudes Tests* (DAT). Information is provided as forthcoming from the correlations between IMAFE factors, between four subtests of the DAT: verbal reasoning (VR), abstract reasoning (AR), space relations (SR) and numerical ability (NA), and between the scores for both instruments. Based on these initial data, it is worth noting that consistency has been found with recent research findings on profiles of undifferentiated traits between sexes as regards different levels of socio-cultural development. This last observation is an alternative focus for the approach to gender issues.

INTRODUCTION

The study of the differences between sexes in individual, cognitive or personality traits, with a bearing on the socio-educational sphere and on vocational development, is a hotly debated topic. When seeking the causes of these differences, many studies resort to psychometric tools, either of a general nature or regarding specific skills. Along these lines, a review of the most recent research identifies two contrasting perspectives; on the one hand, there are approaches reporting differences in the measurements of general intelligence (Lynn et al., 2004; Allik, Must & Lynn 1999; Lynn, 1998) and, on the other, there are those arguing that the differences are recorded in specific skills, such as verbal, mathematical or spatial reasoning (Aluja-Fabregat, Colom, Abad & Juan-Espinosa, 2000; Colom & García-López 2002).

Other research adopts a neurophysiological approach in an attempt to unravel the tangible reasons for the differences between sexes, whether they are hormonal, inherited, in cerebral structures or differences in the interstitial nucleus of the anterior hypothalamus (INAH). Noteworthy within this approach is the large body of knowledge that has been gathered on biological differences in terms of the emotional sphere: aggressiveness, feelings, affects (Rubia, 2007).

The array of explanations for the differences in sex and gender would not be complete without the environmental and socio-cultural approaches. From this perspective, the location of both sexes, their socialisation, the values of the environment that have underscored personal relationships, ways of thinking, expectations and the attitudes adopted regarding each one of them, are identified as *gender differences*. It is precisely within this sphere that the most striking results are to be found.

Amongst those studies of greater significance in view of their novel and somewhat disquieting results, a highlight is the research by D. Schmitt (Schmitt, 2008, 2005), who studies gender differences through the International Sexuality Description Project (ISPD). This is the framework for the most extensive cross-cultural studies to date on sex and personality. It involves 40,000 people of both sexes from 56 countries all over the world, who have responded to, among other instruments, an anonymous self-report. One of its main findings is that the differences and distances in personality traits between men and women are not decreasing, but instead are increasing (Schmitt, 2008). It reports that in social contexts with higher levels of human development and with greater opportunities for gender equality and equity, the personalities of men and women are more differentiated, and these findings are consistent with those of other authors (McCrae et al., 2005, McCrae, 2002 and Costa et al., 2001). By contrast, within more traditional cultural contexts, which have lower indices of equality and are socially less developed, the male profile is more similar to the female profile in terms of the personality traits described in the self-reports. This research is ongoing, and the current stage has included measurements on *subjective wellbeing*, *social dominance*, *sexual aggressiveness* and *psychopathologies*, amongst others.

In view of these results, can it be concluded that the differences between sexes are irreconcilable? If indeed they are, is it inevitable that women's cognitive, attitudinal and aptitudinal functions will continue to be adjudged inferior to men's? Traditionally, the distribution of identities, expectations, responsibilities, professions, and labour, political, artistic, technological and educational roles has been made by attributing greater value to those assigned to men. It may at this point be pertinent to wonder about the success or otherwise of the efforts made to develop programmes and actions on the (utopian?) (desirable?) goal involving the «disappearance» of the differences between sexes. On this matter, we understand there is a need to distinguish between *gender differences* and *gender inequalities*, and the presence of the former should not lead to the superiority of one group over another, yet neither should it entail the wish to *suppress* those differences as the only way of achieving equality and equity.

1. SEX GENDER DIFFERENCES IN EDUCATION

The literature highlights the presence of subtle factors in both formal and informal education that almost imperceptibly convey messages that impact upon the different, and not always equitable, life options and opportunities for both sexes. Along these lines, UNESCO (1998) announced that a priority action in education for the 21st century was the suppression of inequalities and biases between the sexes, in terms of both higher education and research.

Whatever the reasons for these differences, it is still evident that the perception and assumption of the same tend to «materialise» in situations of inequality and discrimination, and special mention should be made of school and home environments as being amongst those with the greatest potential for influencing an individual's development (Martínez, Álvarez & Fernández, 2009 and Álvarez, 2003).

There is a great deal of scientific literature on the different expectations and behaviours of parents and teachers in teaching practices towards each sex. Studies by Jiménez Fernández, C. et al. (2007, 2006a, 2006b and 2005) identify the stimuli used to encourage girls to be obedient, sensitive, affectionate and prudent, whereas the tendency in boys is to encourage attitudes of competitiveness, independence and even aggressiveness. These patterns in education also limit boys' development, as they must adapt their expectations and attitudes to what is expected of them, forgoing personal aspirations and repressing expressions and feelings that might further an image of «weakness».

In their quest to pursue the ramifications of these education patterns in adult development, these studies (Sánchez et al. 2011, 2007) analyse the effects this socialisation has on the generation of stereotypical perceptions regarding occupations and associated studies predominantly in one of the sexes. This research contends that the sexual categorisation of subjects has its correlation in occupations, confirming that specialisation by sex is closely related to future employment perspectives.

Other research (Puyana, 2004) posits that the socialisation of girls tends to focus on the development of the qualities of service, towards more emotional expressions and behaviours, and with a passive sexuality, almost the exact opposite to boys, who are required to control their emotions and are moulded to dominate and be stronger and more aggressive.

At the international seminar on *Gender Equity in Educational Reforms in Latin America*, held in 2005, it was stated that school education perpetu-

ates hierarchies and social, gender, socioeconomic and ethnic inequalities, and this situation comes about through the various learning mechanisms operating within the education system, with stress being placed on the so-called *hidden curriculum*.

Within a Latin American context, Goetschel (2009, 2007) indicates that, in general, the experience of women attending university tends to be «hard» and «difficult», as they are entering predominantly male domains that are highly competitive. For this reason, the author concludes that more egalitarian processes of socialisation are required for both sexes both at home and at school in order to reduce existing inequalities when opting for certain academic profiles.

In research into gender stereotypes in infant education, Bazzano (2006) adopts a Human Rights perspective to sustain that masculinity and femininity are features of social construction, influenced by the social power that informs specific models. She affirms that gender is neither uniform nor monolithic, being pushed towards a normative and preferred «*should be*». She goes on to stress that the most important discrimination does not lie in the access to the education system, but rather in the quality and modes of schooling, in the different treatment by teachers and adults, as expressed through language, the spaces to be occupied or certain teaching devices. For this author, understanding the phenomenon of inequality between sexes involves considering a series of situations that have been reported in numerous instances of research:

- The school system may become a strategic location for perpetuating inequalities, or for generating resistance to freer and more egalitarian experiences.
- Gender differences have a bearing on self-esteem. Males see themselves as having better cognitive capacities, whereas females express higher levels of self-esteem in their interactions and dealings with others.
- Males perceive themselves as having rational skills, whereas women see themselves as having emotional capacities. This difference supports the social construction of the stereotype, and highlights the need to work on the perception of both sexes regarding their potential in these skills.
- The notion of equality, based on the recognition of individual difference and regardless of gender, facilitates the development of potential.

2. OUR RESEARCH

Based on the state-of-the-art described, such questions as: «What makes the sexes different?», «Are attempts to suppress gender differences on the right track?», and «Should the sex variable continue to be relevant in education?» have yet to find satisfactory answers. We can identify three main categories of explanation: *socio-cultural*, *evolutionary* and *instrumental*. The perspective in the first case is that the different models of education and socialisation develop identities that accept inequalities as being inherent to human beings. In the second case, gender differences are part of our genetic make-up; the result of human evolution. Finally, the instrumental explanation comprises the results that may be influenced by errors of measurement, by answers adjusted to suit *social desirability*, or even by the use of questionnaires and inventories that are applied from one cultural context to another without considering the differences between them.

Based on our current knowledge of the subject, and under the conviction that the manner in which the phenomenon is observed needs to be reassessed, we decided to focus our own research by pursuing specific interests. On the one hand, we have addressed the perception the people in the sample (aged 16-18) have of their own gender identity, as we work on the assumption that the different identity profiles will have a given influence on their future academic and career options. In order to gather this information we have collected gender perceptions on an anonymous basis through the IMAFE questionnaire. We also have data on these students' cognitive capacities, as provided by the DAT subtests, which for the purpose of this study have involved the analysis of four of the eight factors evaluated: VR, AR, SR and NA. The purpose is to verify whether there are significant differences, and subsequently investigate to see whether there is any correlation with the personality traits studied.

Regarding the perceived need to modify the scholarly approach to gender differences, we consider it essential to verify whether our initial exploratory data reveal any trend consistent with the research by Schmitt (2005, 2008), specifically concerning the suggestion that a lower socioeconomic development and stronger cultural tradition lead to a smaller differentiation between the personality profiles of males and females. Given these characteristics, we have correlated the scores for both sexes in the four factors of the IMAFE.

2.1. Study premises and research goals

The slow inclusion of women from all segments of the population in Ecuador into public life and into decision-making bodies in the professional,

cultural, political, economic, technological, artistic and educational fields, as well as the presence of males within those spheres that have traditionally been closed off to them, leads us to wonder to what extent the socialisation of families and teachers has a bearing on the generation and maintenance of inequality in opportunities. In order to find answers to our questions, we decided to research a sample of secondary school (2nd year of Bachillerato) students aged 16-18, with the following goals:

1st Stage of the study (described in this paper)

- a) Assess the aptitudes of the sample of students in the cognitive variables measured using *Differential Aptitudes Tests* (DAT).
- b) Use the *IMAFE* questionnaire to assess their perceptions regarding their assumed gender identity and their assimilation of gender stereotypes.
- c) Use *correlations to analyse* the cognitive variables of DAT, and between these and the attitudinal factors of the *IMAFE*, and the scores of both tests.
- d) *Identify* the degree of *profile differentiation* shown by both sectors in the *IMAFE* questionnaire.

2nd Stage (next research)

- e) Identify the possible correlations between the gender identities assumed by the students and the academic possibilities they think are within their reach, according to these identities.
- f) Conduct a content analysis of the discourses of the discussion groups with families and teachers.
- g) Draw up intervention and training proposals (for parents and teachers) based on the results of the analyses made.

2.2. Research Method and Design

Our study is divided into two phases, with the first part involving data gathering and the second one addressing goals a, b, c and d. This first stage is exploratory in nature, being undertaken from a descriptive perspective based on the study of personality variables (*IMAFE* factors) and cognitive ones (*DAT* factors).

2.2.1. Sample

It consists of 1,120 adolescents of both sexes, aged between 16 and 18, studying secondary education (2nd year of Bachillerato) at state, grant-assisted and private schools in Ecuador.

2.2.2. Research instruments

Differential Aptitude Tests (DAT). They predict possible success in those spheres in which the complexity of verbal relationships and concepts has a significant role to play. The items in these tests are grouped into the following categories: a) *Numerical Ability*. Understanding the relationships between numbers. b) *Abstract Reasoning*. Non-verbal measurement of the ability to reason. c) *Speed and Accuracy*. It measures the speed of perception, momentary retentions and the speed of response. d) *Mechanical reasoning*. It presents an illustrated mechanical situation and asks a simple question. e) *Space relations*. This requires the mental handling of objects in a three-dimensional space, e) *Spelling and Language*. Ability to distinguish between correct and incorrect language usage.

2.2.3. Procedure

The first stage involved invite students graduating from the Faculty of Psychology (UTPL) to take part in the research. They were trained in the application of the instruments and in the procedures to be followed (Costa Aguirre, 2009).

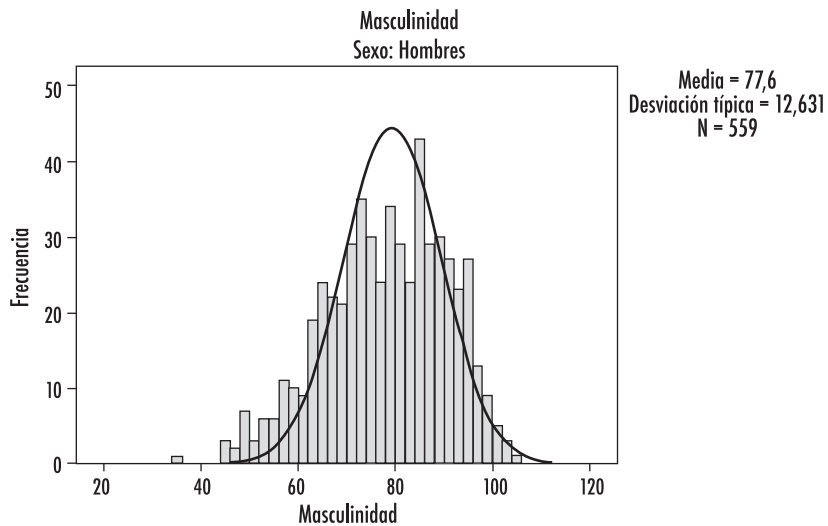
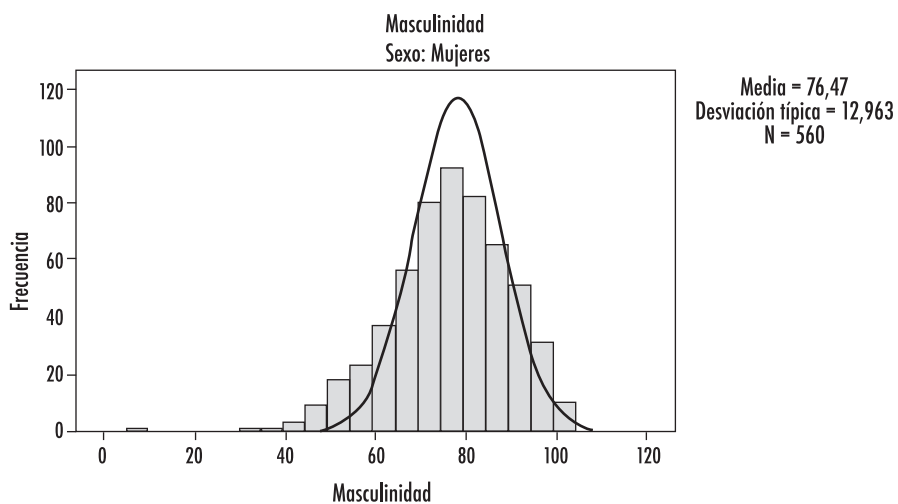
The second stage in the research involves: a) identifying the personality profiles of the school-age adolescents as regards their gender identity (IMAFE), b) identifying their cognitive profiles (DAT subtests), and c) discovering, through discussion groups, the extent to which the adolescents are aware of the implications involved in their assumed gender identity. The data from the IMAFE, DAT (Argentine validation), the in-depth interviews and the discourses of the discussion groups have been analysed using quantitative techniques (SPSS) and qualitative ones involving N-VIVO-8.

2.2.4. Initial data

There follows a detail of the initial data forthcoming from the IMAFE and DAT questionnaires. Regarding the data observed in the IMAFE categories, note should be taken of the following:

Masculinity and Femininity:

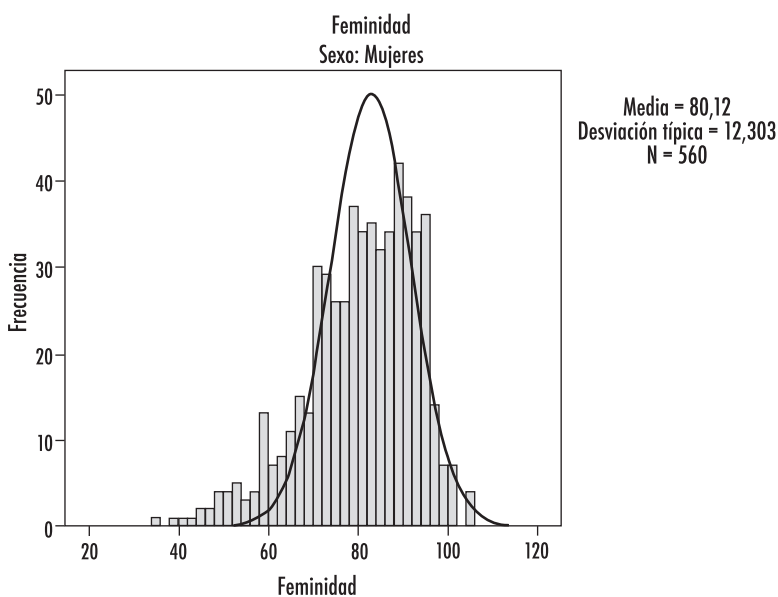
The results obtained in the four categories of the IMAFE questionnaire on the participating sample highlight a reality in which the adolescents of both sexes reveal very similar assumed behaviours in terms of the traits of masculinity and femininity. Graphs 1 and 2 show that the characteristics evaluated do not appear to be exclusive to males.

**Graph 1** Male masculinity**Graph 2** Female masculinity

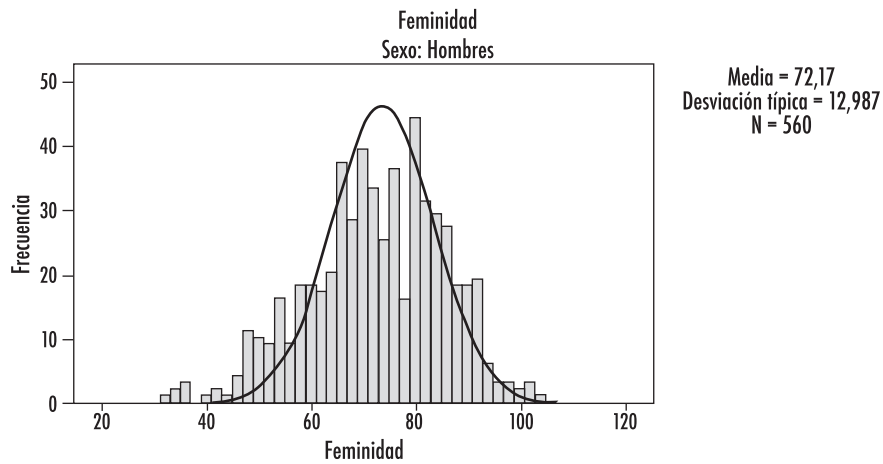
High levels of *masculinity* are apparent in both sexes, with boys recording a figure of 72.17%, whereas the figure for girls is 80.12%. One question would be whether the adolescents are assimilating traits of this nature because of their association with academic success, and subsequent career success. In turn, the boys might be presenting a «politically correct» image, for whilst there is a still an appreciable level of masculinity, exacerbated «machismos» have ceased to be of interest, and at the same time traits in boys such as *affectionate, warm, compassionate, friendly, caring, understanding, cordial, soft voiced, sweet...* are now more «highly rated» amongst women in general, and especially amongst younger ones.

The «masculine» traits observed are not necessarily due exclusively to hormonal effects, as there may be a socio-cultural component that explains the difference as a premise in which recognition is made of the difference for sharing, accepting and validating other realities (Quintero, 2007). In turn, the explanations provided by Schmitt (2008) suggest that high levels of sexual dimorphism are the result of the personality traits of individuals of both sexes located in more favourable and less restrictive social contexts with a greater scope for divergence. By contrast, less favourable socioeconomic contexts might be attenuating the differences in personality traits between them.

The following graphs: femininity and scores recorded by males and females.



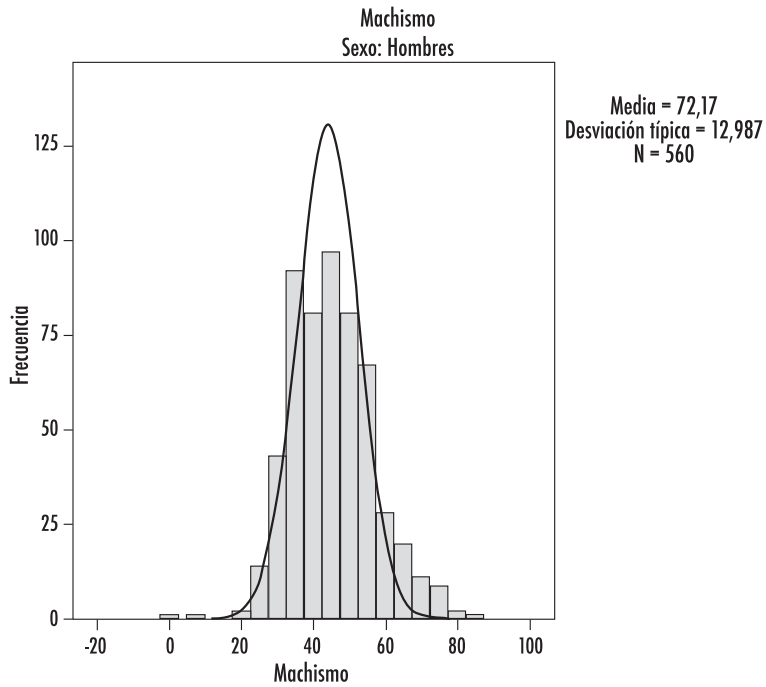
Graph 3. Female femininity

**Graph 4.** Male femininity

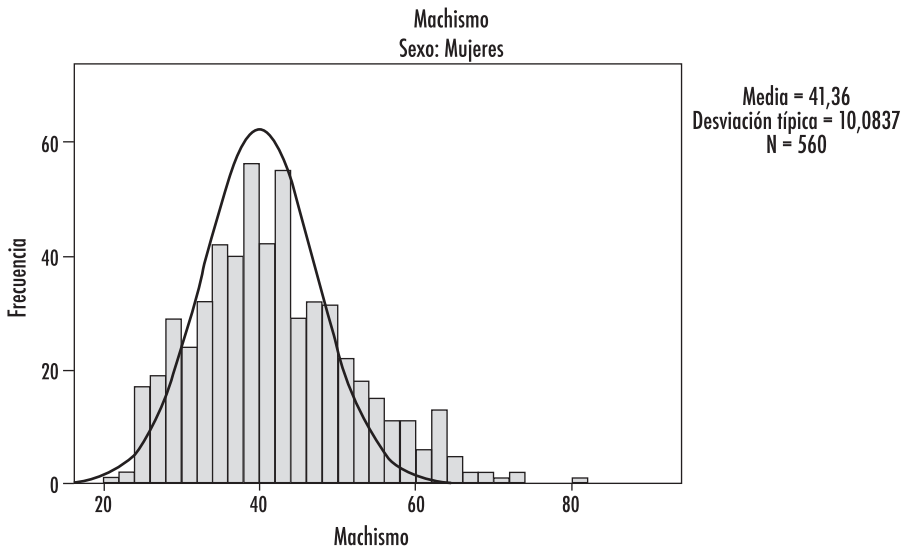
Graphs 3 and 4 present similar results to those recorded in terms of masculinity, albeit more attenuated in this case. Although the scores are close, they are more consistent in females. Males record more disperse scores in these traits.

Submission and Machismo

IMAFE also allows evaluating the traits of submission and machismo. Submission is understood to be the behaviour whereby someone accepts another person's authority, with obedience and compliance, being the expected values in Ecuadorian women, whether this involves respect for the partner, parents or even brothers.



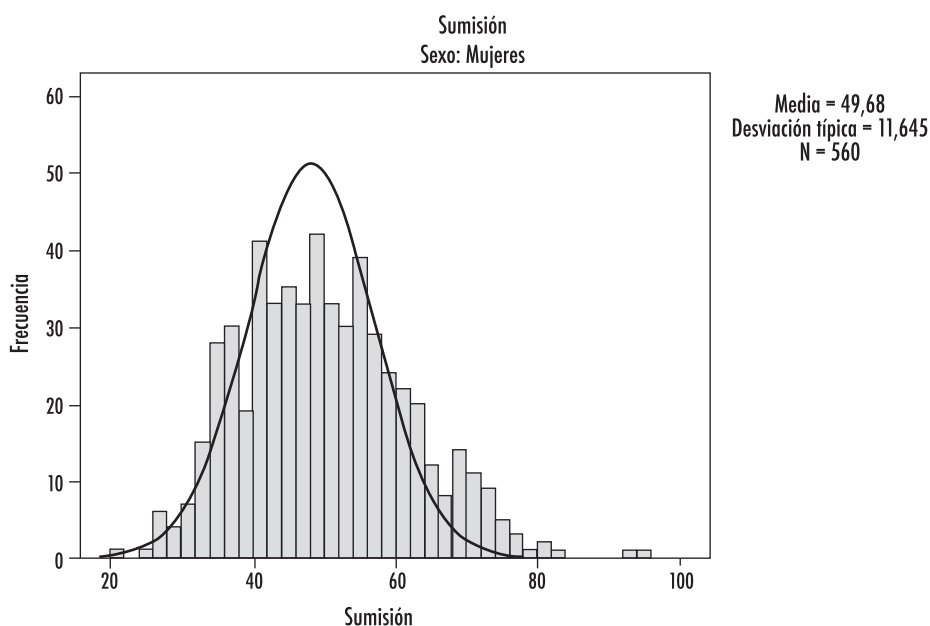
Graph 5. Male machismo



Graph 6. Female machismo

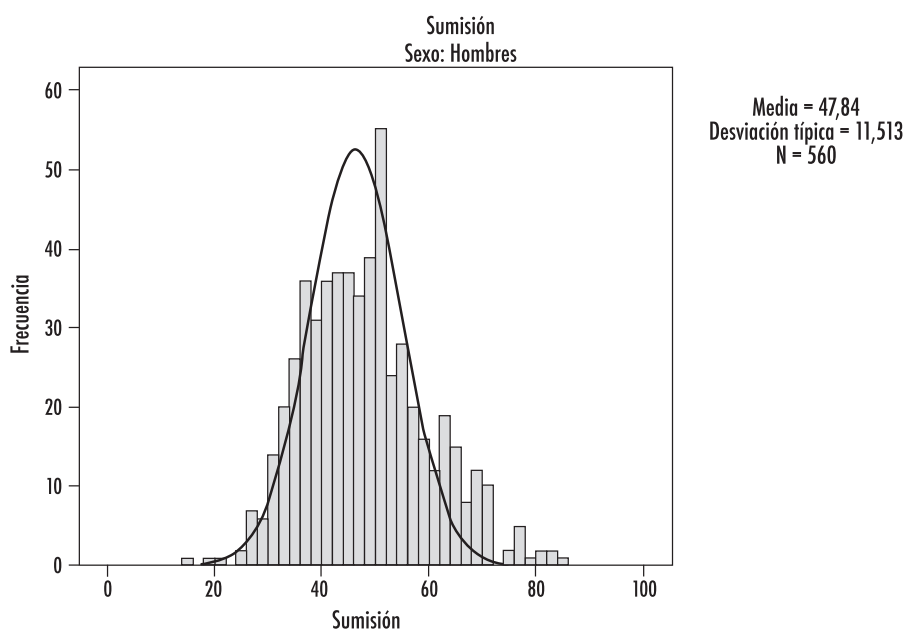
The data in both graphs reveal that the students of both sexes have assimilated the notion of male supremacy over females. It is not surprising that 45.37% of the boys reflect these traits, but what does give rise to some concern is the fact the girls are not significantly different from their male peers, with 41.36% in machismo. Based on the hypothesis of a cultural nature, we might assume these values imply a defensive mechanism on the part of females, or perhaps a real fear of being rejected.

Our attention is drawn to the data on submission, above all in the boys. The girls appear to be consistent with the scores recorded in machismo, but not so much with the reality that women are gradually taking up positions in the world of employment, a circumstance that should lead to a reduction in levels of submission. In spite of this, adolescent girls acknowledge submission to the tune of 49.68%. Regarding this behaviour, Barberá (2005) contends that adolescence is the time when girls feel pressured to accept and control their sexuality, their personal relationships, their desires and their opinions, in order to adapt them to the interpretative framework of the patriarchal system. The educational implication of this is that education systems should reconsider their teaching processes and syllabuses, bearing in mind these socio-cultural codes.



Graph 7. Female submission

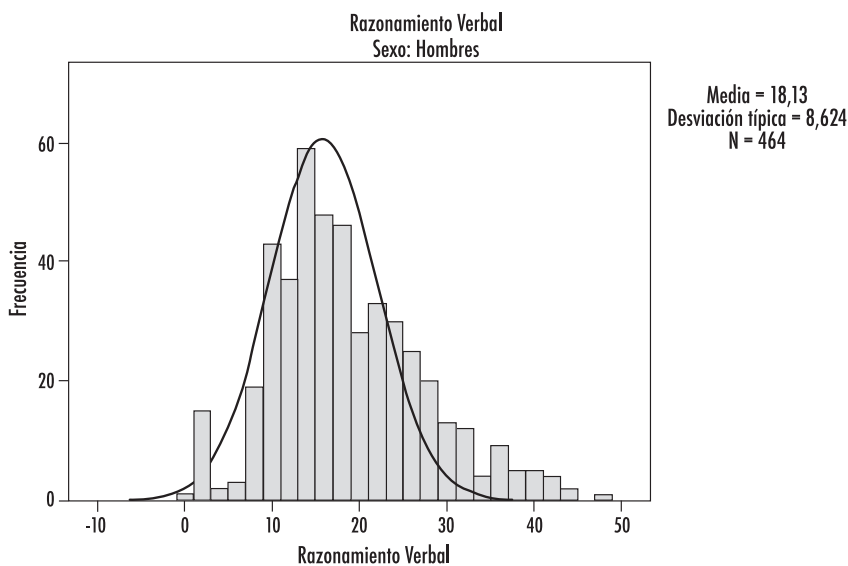
The results for males in *Submission* are harder to interpret, and we should not dismiss the instrumental explanation; that is, the bias of *social desirability*, which tends to affect self-reports such as IMAFE, has influenced the sample, which means therefore that either the group has truly assimilated the stereotype of the «*tamed male*», or the answers have been geared towards a model that the boys consider to be socially more «acceptable». The outcome is that the scores are very close to the girls', and they are even more consistent. On the other hand and without being exclusive, there is the explanation involving *socio-cultural development*, which suggests that more traditional cultures give rise to a smaller difference in personality profiles between the two sexes.



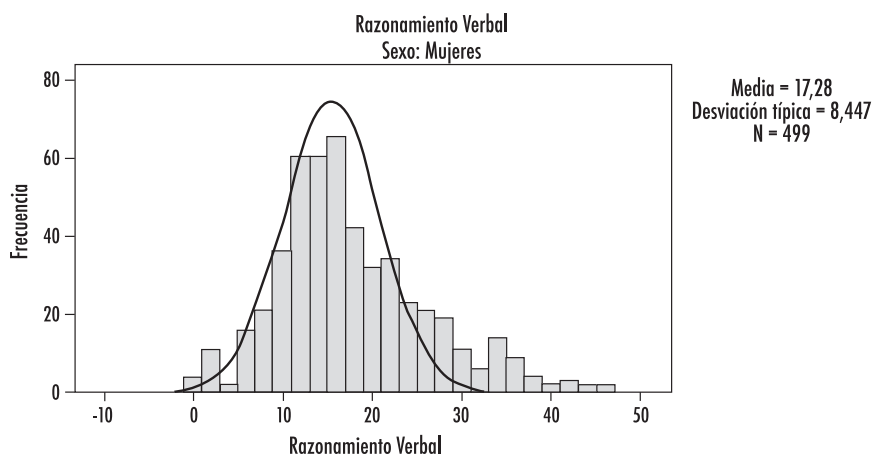
Graph 8. Male submission

Results for the DAT questionnaire

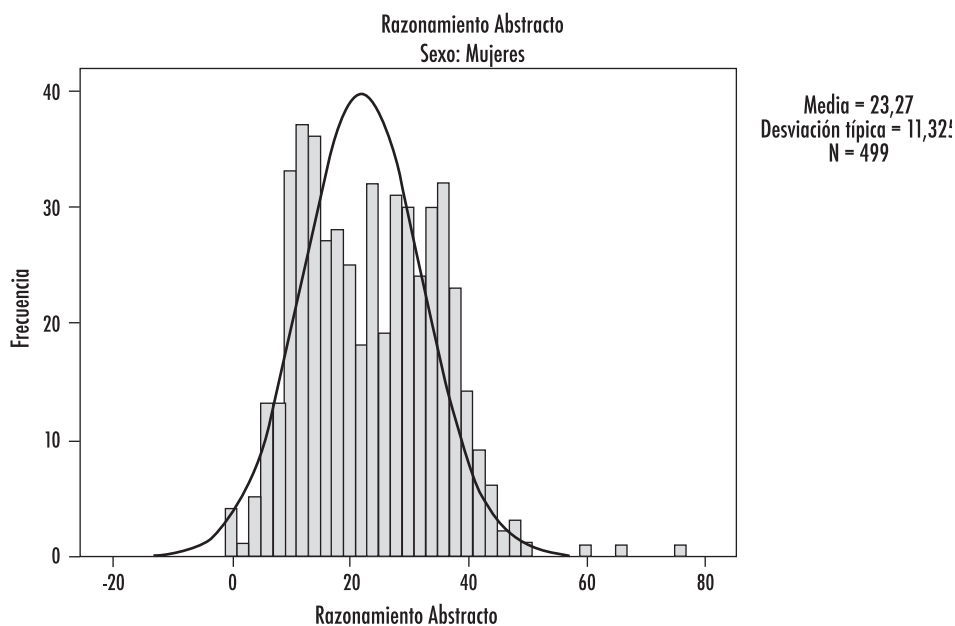
Differential aptitudes have been studied using the eight subtests of the DAT (Argentine version). This study has analysed four of these subtests, and the data for both sexes are consistent with the research conducted in this field, in the sense that the differences in capacities between sexes are not significant. There now follows a presentation of the data for Verbal Reasoning, Abstract Reasoning, Space Relations and Numerical Ability.

**Graph 9.** Male verbal reasoning

This dimension measures the ability to understand concepts expressed in words, the capacity for detachment, generalisation and organised thinking. The boys recorded a mean score of 18.13, whereas the figure for the girls is 17.28. A further piece of information provided by this result is that there are signs of shortcomings in the participants of both sexes.

**Graph 10.** Female verbal reasoning

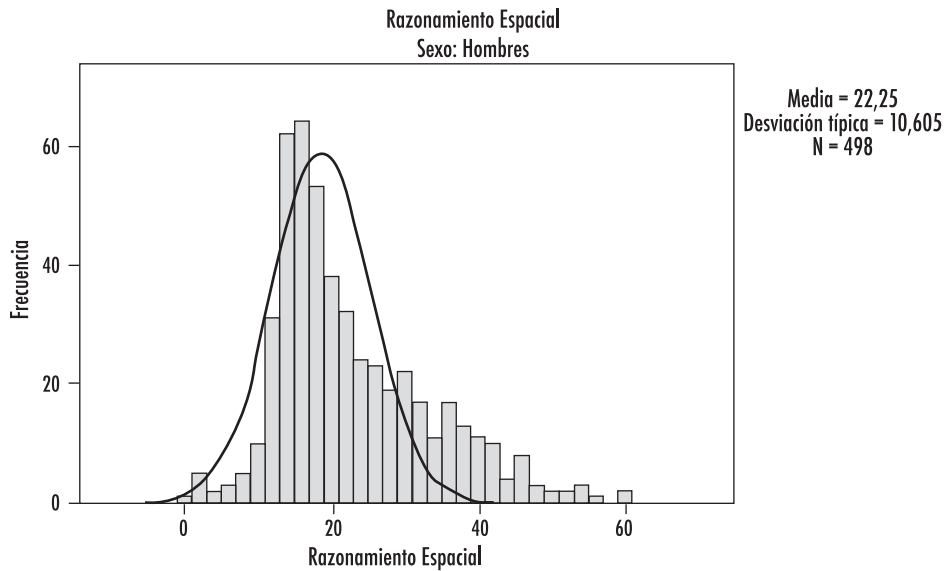
Abstract reasoning is informed by non-verbal stimuli. It is the grasping of a principle that governs a series or succession of events. Our data show low levels of development (they are not close to the average) for both males (23.54) and females (23.57). Regarding other research, our sample does not provide support for data showing males having a greater capacity in this type of reasoning. This leads us to concur with Purves et al., (2008), whereby the results of studies on the better or worse performance in these skills are not definitive or conclusive, but instead individuals use different cognitive strategies.



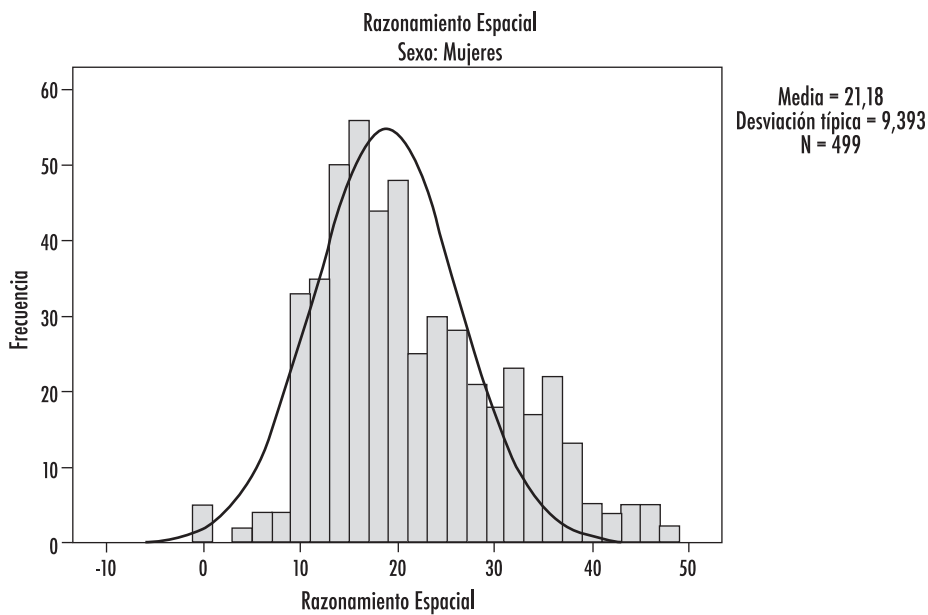
Graph 11. Female abstract reasoning

Space relations

Space Relations is related to the mental arrangement of objects, recognising them in different positions. It also involves the visualisation of a structure based on a design or drawing. The data for this test show that boys and girls record means of 22.25 and 21.18, respectively. Furthermore, both sexes are at the initial levels of development in these capacities. Jiménez, Álvarez et al (2003) record similar results regarding spatial capacity using the Raven II test, and likewise the results of the Primary Mental Abilities test do not present significant difference in spatial capacity and reasoning according to gender.



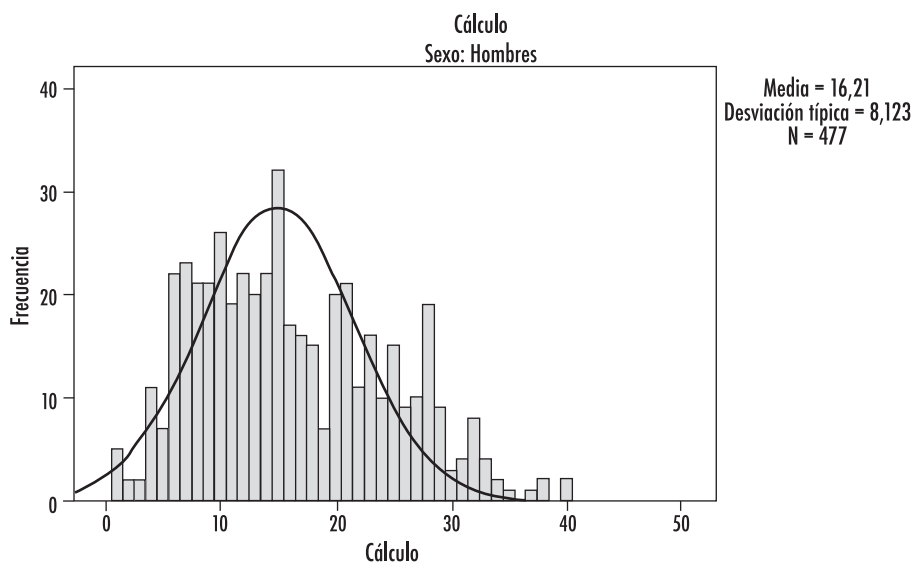
Graph12. Male space relations



Graph13. Female space relations

Numerical ability

The Number Ability test observes the understanding of numerical relationships, reasoning on quantitative concepts, numerical reasoning, concentration and attention.



Graph14. Male numerical ability

The data for Numerical Ability likewise do not show appreciable differences between the sexes. The means recorded for both boys and girls are low. As in the previous factors, together with the data of interest regarding the socialisation processes, there is also a low development of this capacity in both sexes. This may suggest shortcomings in the education system.

Data for the correlations between DAT factors and the IMAFE

The correlations made so far are between the four attitudinal factors of the IMAFE, between the four DAT subtests, and between both instruments. The results are as follows:

FEMALES									
		Masculinity	Femininity	Machismo	Submission	Verbal Reas.	Number Ability	Abstract Reas.	Space Relations
Masculinity	Correlation	1	.469(**)	.138(**)	-0,053	-0,013	0,025	.094(*)	0,021
	Pearson								
	Sig. (bilateral)	0	0	0,001	0,21	0,78	0,582	0,037	0,634
	N	560	560	560	560	499	499	499	499
Femininity	Pearson	.469(**)	1	-.093(*)	.272(**)	0,079	.098(*)	0,066	0,039
	Sig. (bilateral)	0	0	0,028	0	0,078	0,029	0,139	0,389
	N	560	560	560	560	499	499	499	499
Machismo	Pearson	.138(**)	-.093(*)	1	.287(**)	.118(**)	-0,014	.094(*)	0,078
	Sig. (bilateral)	0,001	0,028	0	0	0,009	0,751	0,035	0,083
	N	560	560	560	560	499	499	499	499
Submission	Pearson	-0,053	.272(**)	.287(**)	1	0,037	-0,026	-0,039	-0,021
	Sig. (bilateral)	0,21	0	0	0	0,403	0,555	0,38	0,645
	N	560	560	560	560	499	499	499	499
Verbal Reasoning	Pearson	-0,013	0,079	.118(**)	0,037	1	.284(**)	.465(**)	.400(**)
	Sig. (bilateral)	0,78	0,078	0,009	0,403	0	0	0	0
	N	499	499	499	499	499	499	499	499
Number Ability	Pearson	0,025	.098(*)	-0,014	-0,026	.284(**)	1	.406(**)	.183(**)
	Sig. (bilateral)	0,582	0,029	0,751	0,555	0	0	0	0
	N	499	499	499	499	499	499	499	499
Abstract Reasoning	Pearson	.094(*)	0,066	.094(*)	-0,039	.465(**)	.406(**)	1	.353(**)
	Sig. (bilateral)	0,037	0,139	0,035	0,38	0	0	0	0
	N	499	499	499	499	499	499	499	499
Space Relations	Pearson	0,021	0,039	0,078	-0,021	.400(**)	.183(**)	.353(**)	1
	Sig. (bilateral)	0,634	0,389	0,083	0,645	0	0	0	0
	N	499	499	499	499	499	499	499	499

** . The correlation is significant at the level 0.01 (bilateral) / * . The correlation is significant at the level 0.05 (bilateral).

Table 1. Correlations: 4 DAT subtests IMAFE factors, and between both instruments (female sample)

MALES									
		Masculinity	Femininity	Machismo	Submission	Verbal Reas.	Number Ability	Abstract Reas.	Space Relations
Masculinity	Correlation								
	Pearson	1	.511(**)	.118(**)	0.023	-0.048	-0.042	-0.002	-0.005
	Sig. (bilateral)		0	0.006	0.58	0.301	0.357	0.97	0.918
	N	559	559	548	559	463	476	498	497
Femininity	Pearson	.511(**)	1	-.126(**)	.304(**)	0.02	0.047	0	0.083
	Sig. (bilateral)	0		0.003	0	0.675	0.31	0.991	0.065
	N	559	560	549	560	464	477	499	498
Machismo	Pearson	.118(**)	-.126(**)	1	.251(**)	0.026	0.047	.152(**)	0.082
	Sig. (bilateral)	0.006	0.003		0	0.578	0.313	0.001	0.071
	N	548	549	549	549	455	468	490	489
Submission	Pearson	0.023	.304(**)	.251(**)	1	0.002	0.063	-0.001	0.032
	Sig. (bilateral)	0.58	0	0		0.974	0.17	0.983	0.473
	N	559	560	549	560	464	477	499	498
Verbal Reasoning	Pearson	-0.048	0.02	0.026	0.002	1	.563(**)	.523(**)	.334(**)
	Sig. (bilateral)	0.301	0.675	0.578	0.974		0	0	0
	N	463	464	455	464	464	443	463	462
Number Ability	Pearson	-0.042	0.047	0.047	0.063	.563(**)	1	.519(**)	.281(**)
	Sig. (bilateral)	0.357	0.31	0.313	0.17	0		0	0
	N	476	477	468	477	443	477	476	475
Abstract Reasoning	Pearson	-0.002	0	.152(**)	-0.001	.523(**)	.519(**)	1	.290(**)
	Sig. (bilateral)	0.97	0.991	0.001	0.983	0	0		0
	N	498	499	490	499	463	476	499	497
Space Relations	Pearson	-0.005	0.083	0.082	0.032	.334(**)	.281(**)	.290(**)	1
	Sig. (bilateral)	0.918	0.065	0.071	0.473	0	0	0	
	N	497	498	489	498	462	475	497	498

** . The correlation is significant at the level 0.01 (bilateral) / * . The correlation is significant at the level 0.05 (bilateral).

Table 2. Correlations: 4 DAT subtests IMAFE factors, and between both instruments (male sample)

3. INTERPRETATION OF DATA FROM THE EXPLORATORY STUDY

The masculinity factor in females correlates positively with femininity and machismo, which might indicate that the adolescents in the sample are assimilating traits traditionally attributed to males (self-confidence, decision-making, independence, analytical character, competitiveness, energy...), which tend to be associated with social success, together with traits of femininity, considered to be «typical» of their gender (sensitivity, understanding, tenderness, affection...) According to Barberá & Martínez (2005), this situation might be due to a change in traditional personality patterns, driven by social transformations.

The correlations between the male scores follow the same trend of non-differentiation as the personality profile observed amongst females; the masculinity factor also correlates positively with both those of femininity and machismo, and the values of these correlations are even somewhat higher than amongst females.

Femininity amongst the girls records a positive correlation with the traits of masculinity and submission, which might indicate that the traits of femininity are perceived as the opposite to those of machismo. The same is observed in the case of males, with similar results to those obtained by the females. Regarding these scores for femininity and submission, these adolescents reveal a certain difference, albeit not a significant one, with submission, with this trait being a characteristic that is reinforced by socialisation values in Ecuador, in the sense that dependence behaviour is identified as a «value».

Regarding the correlations between machismo and submission, similar and significant values are observed in both sexes. This result might indicate that machismo is the expression of some shortcoming; nevertheless, these are two traits that could be interdependent and, therefore, they should be researched further in the future. These data suggest a possible confrontation between the dimension of instrumentality (independence, dominance, competitiveness, self-assurance) traditionally assigned to males, and that of expressivity (ability to devote oneself fully to others, kindness, empathy, service) usually attributed to females. In this case, too, both sexes express positive traits in instrumentality and expressivity.

In short, an explanatory hypothesis may be propounded for these results by analysing the scores recorded in the IMAFE and considering the perspective emanating from current research regarding the influence of socio-cultural development. The theory is that those societies that maintain rigid systems separating the roles of men and women are also fostering, in

their communication dynamics, the need to uphold at all costs a *correct social image*. Within these contexts, describing oneself as having extreme traits, even when the inventory is anonymous, may be perceived as a threat to one's privacy, and this may mean that the answers are focused on the middle ground, so the profiles of both sexes may appear closer to one another. On the other hand, more open societies with greater levels of recognition and appreciation of differences may mean there is less fear of expressing oneself honestly, and therefore such differences may be seen more clearly.

Returning to the results of the correlations, those made between the DAT subtests and the IMAFE factors indicate that the gender variable does not determine the superiority of either sex in specific aptitudes, given that no noteworthy associations are observed. The females record a moderate and significant correlation between verbal reasoning and machismo traits. In males, our attention is drawn to the fact this correlation is not made with verbal reasoning, but with abstract reasoning instead. Along these lines, in prior research the psychometric measurements of personality traits and cognitive traits (e.g., IQ) do not usually correlate. Nonetheless, Cattell (1957) already included an intelligence factor in personality, and more recent personality models, generally based on the «five-factor models», also tend to incorporate them. Indeed, the research by Schmitt (2008, 2005) is being conducted within this model («Big Five»).

If we seek to unify the study's results, we note that the participants, although involved in different processes of cultural, social, political and economic transformation, also reveal a high degree of assimilation of the common patterns of socialisation in Ecuadorian culture. Thus, the recognition of women's inclusion in the field of employment, their embracing of public life, their greater involvement in the means of production, and their high level of mobility, amongst other factors, mean that their self-perception has steadily improved in both self-concept and self-esteem. However, this progress in the removal of barriers towards more egalitarian and equitable situations still co-exists alongside contradictions in the self-perception of their own gender identity.

4. FINAL DISCUSSION

Regarding the data from our study of the traits measured by the IMAFE, we consider those that are consistent with certain findings in the research by Schmitt to be especially significant in the sense that here, too, there is no evidence of clearly differentiated profiles between the boys and girls in our sample.



Accordingly, the fact societies with more sensitivity towards gender equality, providing their citizens with greater opportunities in terms of equality and human development, are also recording a greater differentiation in the personality traits between sexes, is far from being a pessimistic outcome for those who sought a specular identification between the sexes; quite the contrary, it celebrates the richness of diversity.

To conclude, we should like to highlight the implications our ongoing study might have for research and education. For the former, it appears there is a need to modify the perspectives of the scholarly analysis of differences between the sexes, and give more value to the adjustment strategies each human being adopts to integrate and develop within the social and temporal context in which they find themselves.

In terms of the implications for education, we continue to see the need to insist upon the importance for all spheres of education not only to acknowledge the richness of diversity, but also to understand that human progress involves establishing the conditions to enable that very diversity to be expressed freely and legitimately.



REFERENCES

- Allik, J., Must, O. & Lynn, R. (1999). Sex differences in general intelligence among high school graduates: *Personality and Individual Differences*, 26 (6), 1137-1141.
- Aluja-Fabregat, A., Colom, R., Abad, F. & Juan-Espinosa, M. (2000). Sex Differences in General Intelligence Defined as G among Young Adolescents. *Personality and Individual Differences*, 28, 813-819.
- Álvarez, González, B. (2003). *Orientación Familiar, Intervención Familiar en el ámbito de la diversidad*. Madrid: Sanz y Torres.
- Barberá, E. & Martínez Benlloch, I. (2005). *Psicología y Género*. Madrid: Pearson Prentice Hall.
- Bazzano, M. M. (2006). Cuestiones de género en la escuela primaria – 1st *Inter-American Forum of Women against Corruption*. Univ. Buenos Aires. <http://www.agendadelasmujeres.com.ar/index2.php?id=3¬a=6757>
- Cattell, Raymond B. (1957). *Personality and motivation structure and measurement*. World Book Co.
- Colom, R. & García-López O. (2002). Sex Differences in Fluid Intelligence among High School Graduates. *Personality and Individual Differences*, 32, 445-451.
- Social Contract for Education. Retrieved from: www.utpl.edu.ec/educittes/
- Costa Aguirre, A. (2009). Guía Didáctica: *Roles de Género y relación con la orientación académica de los estudiantes de bachillerato de los colegios mixtos del Ecuador*. Loja-Ecuador: Editorial UTPL.
- Costa, P. T., Terracciano, A. & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. In Schmitt, D.P. et al. (2008) Why Can't a Man Be More Like a Woman? Sex Differences in Big Five Personality Traits Across 55 Cultures. *Journal of Personality and Social Psychology*. 94 (1), 168-182.
- Goetschel, A. M. (2009). *Perspectivas de la Educación en América Latina*. Quito-Ecuador: Flacso.
- Goetschel, A. M. (2007). *Educación de las mujeres, maestras y esferas publicas*. Quito-Ecuador: Flacso.
- Jiménez Fernández, C., Álvarez González, B., Murga Menoyo, M. A., Gil Pascual, J. A., Téllez Muñoz, J. A. & Trillo, P. (2007). Hacia un modelo sociocultural explicativo del alto rendimiento y de la alta capacidad I: Ámbito familiar. *Revista Española de Orientación y Psicopedagogía*. REOP, 18 (1), 31-46.
- Jiménez Fernández, C., Murga Menoyo, M. A., Álvarez González, B. Gil Pascual, J. A. & Téllez Muñoz, J. A. (2006). Estudiantes universitarios ante la cuestión de género. Estudio propedéutico para la investigación pedagógica. *Journal: ENSAIO. Avaliação e Políticas Públicas em Educação*, 14 (53), 437-465.
- Jiménez Fernández, C., Álvarez González, B., Gil Pascual, J. A., Murga Menoyo, M. A., & Téllez Muñoz, J. A. (2006). Educación, diversidad de los más capaces y estereotipos de género. *RELIEVE*, 12 (2), 261-287.
- Jiménez Fernández, C., Álvarez González, B., Murga Menoyo, M. A., Gil Pascual, J.A. & Téllez Muñoz, J. A. (2007). Educación, Alta capacidad y Género: Alumnos con Premio Extraordinario de Bachillerato. *Revista de Investigación Educativa (RIE)*, 23 (2), 391-416.

- Jiménez Fernández, C.; Aguado, T.; Álvarez, B.; Gil, J. A. & Jiménez, R. (2005). Caracterización de los alumnos con Premio Extraordinario de Bachillerato. *Bordón. Revista de Investigación Educativa*, 23 (2), 341-416.
- Lynn, R. Allik, J. & Irwing, P. (2004). Sex differences on three factors identified in Raven's Standard Progressive Matrices. *Intelligence*, 32, 411-424.
- Lynn, R. (1998). Sex Differences in Intelligence: Data from a Scottish Standardisation Sample of the WAIS-R. *Personality and Individual Differences*, 24, 289-290.
- Martínez González, M. C., Álvarez González, B. & Fernández Suárez, A. P. (2009). *Orientación Familiar. Contextos, Evaluación e Intervención*. Madrid: Sanz y Torres.
- McCrae, R. R. (2002). NEO-PI-R data from 36 cultures. Further intercultural comparisons. In Schmitt, D. P. et al. (2008). Why Can't a Man Be More Like a Woman? Sex Differences in Big Five Personality Traits Across 55 Cultures. *Journal of Personality and Social Psychology*, 94 (1), 168-182.
- McCrae, R. R., Terracciano, A. & 78 Members of the Personality Profiles of Cultures Project. (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. In Schmitt, D. P. et al. (2008) Why Can't a Man Be More Like a Woman? Sex Differences in Big Five Personality Traits Across 55 Cultures. *Journal of Personality and Social Psychology*, 94 (1), 547-561.
- Morgado Bernal, I. (2005). *Psicobiología: De los genes a la Cognición y el Comportamiento*. Barcelona: Editorial Ariel.
- Pinel, J. P. J. (2001). *Biopsicología*. Madrid: Prentice Hall.
- Purves, D. et al. (2006). *Neurociencia*. Madrid: Editorial Médica Panamericana.
- Puyana, Y. (2004). *Género y familia: asociaciones necesarias*. Bogotá: Observatorio de Asuntos de Género.
- Quintero Velásquez, A. M. (2007). *Diccionario especializado en Familia y Género*. Argentina: Grupo Editorial Lumen.
- Rubia, F. (2007). Los cerebros también tienen su sexo, masculino y femenino. *Terra Ciencia*. Accessed: February, 2009. At: http://actualidad.terra.es/ciencia/articulo/existe_cerebro_masculino_femenino_determina_143638.htm
- Sánchez García, M. F. et al. (2007). Género y desarrollo profesional: Identificación y valoración de los elementos implicados en la evolución de la carrera profesional de la población joven y adulta desde la perspectiva de género. Report on R&D&i Project 2004-2007, Order TAS/2626/2004, 1st Sept. Instituto de la Mujer.
- Sánchez García, M. F.; Suárez Ortega, M.; Manzano, N.; Oliveros Martín-Varés, L. & Malik Liévano, B. (2011). Estereotipos de género y valores del trabajo entre los estudiantes españoles. *Revista de Educación*, 355, 331-354.
- Schmitt, D. P. (2005). Sociosexuality from to . A 48-nation study of sex, culture, and strategies of human mating. *Behavioural and Brain Sciences*, 28, 247-311.
- Schmitt, D. P., Realo, A., Voracek, M. & Allik, J. (2008). Why Can't a Man Be More Like a Woman? Sex Differences in Big Five Personality Traits Across 55 Cultures. *Journal of Personality and Social Psychology*, 94 (1), 168-182.

KEY WORDS

Gender differences, gender equity, attitudinal factors and gender, cognitive abilities, masculinity, femininity, submission, personality traits.

PALABRAS CLAVE

Diferencias de género, igualdad de género, factores actitudinales y género, habilidades cognitivas, masculinidad, feminidad, rasgos de la personalidad

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