

Family and psychosocial variables in the choice of university studies

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Familia y variables psicosociales en la elección de estudios universitarios

Summary

Introduction. Family order of the children and family size as well as other psychosocial variables on University of the Basque Country (UBC) students are compared in order to relate these data with the choice of type of university studies.

Methods. As a sample, we studied 6,013 students from the UBC in different careers and courses. Mean age was 20.26 years. The following instruments were used: a sociodemographic questionnaire, the Eysenck Personality Scale and Yllá Alexithymia Scale. All them were validated for our country.

Results. The presence of women was greater in all the career studies except for engineering where the proportion of men was greater. The data verify the relationship between being the youngest or intermediate child of a family of three or more children and studying Journalism and Fine Arts and that the first born of families of two or more children are more represented in Engineering. It is interesting that there are fewer only children in Medicine where children of families of three or more, both first-born as well as intermediate, go. These variables, as well as extraversion, neuroticism and alexithymia, were different in the different career studies. It was also observed that the female university students scored higher in the neuroticism scale and that the levels of Alexithymia were higher among the men. Further, relations were found between child birth order and family size and personality, in the sense that the Medical and Odontology careers presented lower scores in Alexithymia while the more technical careers such as Engineering are those that present a higher alexithymia. Medicine and Odontology, followed by Mathematics and Journalism, obtained the highest scores in neuroticism. Engineering students obtain the lowest neuroticism. The most extroverted students are those from Journalism, Chemistry, Economics and Odontology.

Conclusions. The choice of university studies is associated to gender, birth order, family size and personality patterns. Personality variables are related to gender, birth order and family size.

Key words: Gender. Birth order. Siblings. Personality. Choice of university studies.

Resumen

Introducción. Se compara el orden de fratría y el tamaño de la familia y otras variables psicosociales de estudiantes universitarios con la elección del tipo de estudio superiores.

Métodos. Se estudian como muestra 6.013 estudiantes de la Universidad del País Vasco pertenecientes a diversas carreras y cursos. La media de edad fue de 20,26 años. Se pasaron cuestionarios de filiación, lugar de nacimiento en la familia y número de hermanos, cuestiones sociodemográficas como el sexo y el tipo de estudios universitarios y el Cuestionario de Neuroticismo y Extraversión de Eysenck y la Escala de Alexitimia de Yllá. Se tuvieron en cuenta las condiciones óptimas para la aplicación de los instrumentos.

Resultados. La presencia de mujeres fue superior en todas las licenciaturas, a excepción de las ingenierías donde la proporción de hombres era mayor. Los datos confirman la relación entre ser el hijo pequeño o el intermedio, de familias de tres o más hijos y cursar estudios de Periodismo y Bellas Artes y que los primogénitos de familias de dos o más hijos están sobrerrepresentados en ingeniería. Curiosamente hay menos hijos únicos en Medicina, donde además acuden en mayor proporción hijos de familias de tres o más miembros, tanto primogénitos como intermedios. Estas variables, así como la extraversión, el neuroticismo y la alexitimia fueron diferentes entre las distintas licenciaturas. Se observó, asimismo, que las mujeres universitarias puntuaron de forma más elevada en la escala de neuroticismo y los niveles de alexitimia fueron más elevados entre los hombres. Además se encontraron relaciones entre orden de fratría y tamaño familiar y personalidad, en el sentido de que las licenciaturas de Medicina y Odontología presentan las puntuaciones más bajas en alexitimia, mientras que las carreras más técnicas, como las ingenierías, son las que presentan una alexitimia mayor. Medicina y Odontología, seguidas de Matemáticas y Periodismo obtienen las puntuaciones más altas en neuroticismo. Los alumnos de las ingenierías obtienen el neuroticismo más bajo. Los estudiantes más extrovertidos son los de Periodismo, Química, Economía y Odontología.

Conclusiones. La elección de determinadas licenciaturas guarda una relación con el sexo, el orden que se ocupa en la fratría, el tamaño familiar y los rasgos de la personalidad. Los rasgos de la personalidad se relacionan con el sexo, la orden que se ocupa en la familia y el tamaño familiar.

Palabras clave: Sexo. Orden de nacimiento. Número de hermanos. Personalidad. Elección universitaria.

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INTRODUCTION

The relationship between personality, family size and birth order is receiving much attention by the investigators

and, as an example of this, 1011 papers were published on the subject¹ from 1976 to 1993.

In relationship to personality, some of these investigations seek confirmation of the thesis expressed by Adler in 1926² in the sense that the children's order in the family means special relationships with the parental figures which, in turn, shape the subject's personality. Adler attributed a special situation to the youngest child, with needs of protection when the rest of the siblings are already more independent. This situation would not be pleasant for the youngest who would try to demonstrate what he/she is capable of. It could thus exacerbate desire for power and he/she would only be content with the best situations, wanting to stand out over the others. According to Adler this is one type of younger sibling, the one who manages to go beyond the other siblings and, in comparison with this one, there would be another type of younger sibling, who, although moved by the same desire, could not obtain it so that he/she would withdraw and would no longer have an adapted behavior. Underlying both types of character, we would find, in any event, an initial inferiority feeling. Adler attributes the advantage of counting on paternal trust from birth to the older sibling, with a tendency to develop a high concept of oneself, of one's own power, presenting greater conservatism. The second sibling would maintain a constant rivalry with the older sibling during all his/her life. Finally, the only child would be exposed to that which Adler calls educative attacks of the persons surrounding him/her. The parents' enthusiasm would lead to a lack of independence, also accustoming the child to finding a smooth road, without difficulties.

Now in our times, Eisenman³ postulates that the first borns are different from the rest of the siblings. The causes, according to this author, would have to be sought in the greater anxiety of the parents, greater demand and overprotection, above all if they are females. Furthermore, the first born spends more time alone with his/her parents than the following siblings until the second child is born. This makes the first borns more fearful and more intellectually oriented. These characteristics would be, according to this author, equally valid for the only child.

Along the same line of contrasting only children and first borns with the rest of the siblings, and also from a psychoanalytic model, Curtis and Cowell⁴ find a significant relationship between order of birth and pathological narcissism, the first group commented on, that made up by only children and first borns, being the ones who score highest in their investigation.

In a sample of 2886 young people on their entry into the air force, Fullerton et al.⁵ found that the first borns presented negative feelings associated with psychological stress and anxiety in a greater degree than the rest of the siblings who showed greater well being.

In an investigation on only children performed in the general population in China, Falbo and Poston⁶ did not find any differences in personality between them and subjects from other family sizes.

Along the same line, Mellor⁷ characterized the subjects according to their birth order and family size. The originality of his results rests on the fact that when both variables are combined, it is found that the results for the only children are similar to those of the first borns and youngest child of two-child families. These results coincide with those obtained in the meta-analysis performed by Falbo and Polit⁸ on the investigations performed on the only child since 1925. In a previous investigation, some of the authors of this study⁹ related scores on the Eysenck personality questionnaire with the birth order and family size. This last variable was the only one that appeared associated to some personality factor, specifically extraversion, the siblings of families of more than two children scoring higher than those of a smaller size. The differences found refer to this same variable, family size or number of siblings, in the sense that the subjects with more than two siblings scored higher in extraversion than those of families of two, whether first borns or the youngest child.

OBJECTIVES

A first fundamental objective for us refers to making a description of the student population according to their distribution by faculties and establishing a relationship between the type of studies chosen and gender, family size, child order and personality.

A second objective is to examine the relationship between gender, order of the student among the siblings, family size and scores obtained in the personality variables: neuroticism, extraversion and alexithymia.

METHODS

Sample

The sample was made up of 6,013 students belonging to the faculties and high technical schools of the University of the Basque Country, IBC/EHU. Their ages, greater than 17 years, presented a mean (\pm standard deviation) of 20.26 years (\pm 2.12).

Procedure

The responses to the Eysenck personality questionnaire (EPI), the EPI and personal data were included in a larger protocol specifically created for an investigation on Mental Health, Personality, and Alcohol Consumption in

university students in the province of Vizcaya. All the students belonging to the first, third and fifth year of the career studies existing in Vizcaya made up the sample. After obtaining the acceptance by the University President's Office to carry out the investigation, contacts were made with the deans, who, in turn, provided the most convenient hours to carry out the test in each Faculty. The students were informed about the purpose of the study, that their participation was anonymous and voluntary, and also that they could ask as many questions as they wanted to while filling out of the tests.

Instruments

Among the many socio-biographical questions that are in the protocol, we have used those related to gender, age, number of siblings of the participant (to which one was then added to obtain the number of children in the family, variable that was called family size) and birth order for this present study.

The EPI¹⁰ to measure some personality variables, such as neuroticism, extroversion and sincerity. This is a very well known questionnaire that is used in our setting and whose adaptation to the Spanish population was performed by Sanchez Turet¹⁰.

The Ylla alexithymia scale YAS^{11,12}, is a scale created to assess alexithymia in our latitudes. It is made up of 21 items and has demonstrated good psychometric qualities in different studies.

RESULTS

The results that will be shown in the tables and charts presented in the following will be divided into two sections:

1. University faculties and gender, number of siblings and place among the children, neuroticism, extraversion and alexithymia.
2. Relationship between gender, child order and family size and personality.

TABLE 1. Distribution by gender and faculties

<i>Faculty</i>	<i>Men</i>	<i>Women</i>
Med. Odont.	30.2	69.8
Engineering	77.2	22.8
Sciences	45.4	54.6
Econ.-Business.	39.8	60.2
Journalism	36.8	63.2
Fines Arts	28.9	71.1
Total	45.2	54.8

Description of the sample by faculties

Gender and faculties

The initial number of students surveyed was 6,013, of which 45.2% were men and 54.8% women, all belonging to the 1st, 3rd and 5th courses of the Faculties and High Technical Schools of the Public University of the Basque Country with site in Vizcaya. Several careers are included in some of these Faculties and High Technical Schools. Thus, in the Medicine and Odontology Faculty, the career studies of Medicine and those of Odontology are given; in the High Engineering School, the career studies of Industrial Engineering and Telecommunications; in the Faculty of Sciences, Biology, Geology, Mathematics, Physics and Chemistry; in the Faculty of Economics, the career studies in Economics and Business; in Journalism, the career studies of Sciences of Information and Social and Political Sciences and finally, the career studies of Fine Arts (table 1).

As we see, in all the Faculties except in the Schools of Engineering, the proportion of women is greater than that of the men.

Order of child and faculties

After distribution by gender, categories were made of the individuals by birth order and family size. In our study, and as we see in table 2, we find 6.3% of only children. A

TABLE 2. Percentage of the different orders of children in the faculties

<i>Faculty</i>	<i>O</i>	<i>OL of 2</i>	<i>OL of 3 more</i>	<i>S of 2</i>	<i>S of 3 or more</i>	<i>I of 3 or more</i>
Med. Odont.	4.5	22.2	25.2	1.2	9.3	27.5
Engineering	5.4	31.4	19	14.2	11.3	18.7
Sciences	7.2	26.1	16	15.4	12.1	23.2
Econ. Business	7.2	29.5	13.8	15.7	13.4	20.3
Journalism	7	24.7	14.9	16.1	15.5	21.6
Fine Arts	4	18.7	16.3	16.5	17.1	27.5
Total	6.3	26.5	17.1	14.9	12.8	22.4

O: only child; OLo2: oldest of two siblings; OL of 3: oldest of three or more siblings; S of 2: smallest of two siblings; S of 3: smallest of three siblings or more; I of 3 or more: intermediate of three or more siblings.

total of 41.4% of the sample would be made up by older individuals of 2 siblings and the youngest child of 2 siblings and 17.1% are siblings who are the oldest in families of 3 or more siblings and finally, the intermediate children of families of 3 or more siblings account for 22.4% of the sample. The total values are similar to those described by Mellor⁷ who, even using the categorization for the distribution of the classic birth order of Adler, only children, first borns and youngest, find a family distribution that is similar in a sample of students from Los Angeles.

As we see, Fine Arts and Journalism have a larger amount of intermediate children and youngest children of large families, than other career studies.

The first born go more to Engineering than to other careers.

The older and intermediate children of large families go to Medicine more than other careers.

Family size and faculties

In **table 3**, we can observe the frequency of belonging to families that are more or less numerous in the population studied. In regards to this variable, 6.3% of the subjects come from families having a single child, 41.4% from small families, of 2 children, while 52.3% are made up of families which are considered large families in our setting, of more than 3 children. In this case as well, the results replicate those found by Mellor in 1989, with values of 8, 38 and 53%, respectively.

We see how there are few only children in Medicine and Fine Arts. There are more children of families of 3 or more in these career studies.

Personality and career studies

In this case, we give the details of the different career studies, some of which are given in the same faculty.

In **table 4**, we can observe the relationship found between the type of career studies and the Neuroticism, Extraversion and Sincerity levels in the Eysenck per-

TABLE 3. Percentage of the different family sizes in the University

Faculty	One child	Two children	Three children	Four or more children
Med. and Odont.	4.5	33.5	33.2	28.8
Engineering	5.4	45.6	30.7	18.3
Sciences	7.2	41.4	28.8	22.6
Econ.-Business	7.1	45.1	28.3	19.4
Journalism	7	40.8	28.2	23.3
Fine Arts	4	35.1	37	23.9
Total	6.3	41.4	30.1	22.2

TABLE 4. Scores in the Eysenck personality questionnaire (EPI) and degree studies

Degree studies	Neuroticism		Extraversion		Sincerity	
	Mean \pm SD		Mean \pm SD		Mean \pm SD	
Fine Arts	11.9	4.4	11	4.3	7	1.4
Biology	11.7	4.2	11	3.8	6.7	1.5
Economy	11.7	4.3	11.5	3.5	6.8	1.4
Business	12.2	4.1	11.4	3.6	6.9	1.4
Physics	11.4	4.3	10.8	4.1	6.6	1.4
Geology	11.5	4.6	11.4	4.1	6.5	1.5
Engineering	11.1	4.2	11.3	3.7	6.5	1.5
Mathematics	12.4	4.5	10.7	3.8	7	1.4
Medicine	12.4	4.1	10.7	3.8	6.7	1.4
Chemistry	12	4.4	11.5	3.8	6.7	1.5
Telecommunic.	10.6	4.1	11	3.9	6.5	1.3
Odontology	12.9	3.4	12.2	3.3	6.8	1.4
Journalism	12.3	4.3	11.7	3.8	6.9	1.4
Sociology	11.3	4.3	11.4	3.9	6.7	1.5
	p 0.001		p 0.001			

sonality questionnaire, EPI. The faculties with the highest scores in neuroticism are Medicine (12.4) and Odontology (12.9), Mathematics (12.4) and Journalism (12.3).

The extreme opposite scores are occupied by Engineering studies: industrial engineering (11.1) and especially telecommunications (10.6). Accompanying these two degrees, sociology is found (11.3).

In regards to the extraversion factor, the degree studies that obtain the highest scores are Odontology (12.2), Journalism (11.7), Chemistry (11.5) and Economy (11.5). The degree studies with the lowest scores are Medicine (10.7), Mathematics (10.7), Physics (10.8), Fine Arts (10.9) and Telecommunications (11).

Regarding Sincerity, the differences were not significant.

In **table 5**, we see how the most technical degree studies, Industrial Engineering and Telecommunications, are the ones that show a greater level of alexithymia, measured by the YAS. The mean score of the students is 62.5 and 61.3 respectively. Next, we find the degree studies of Sciences, Physics (60) and Geology (60). The contrary position is occupied by the Medicine (56.7) and Odontology (56.1) faculties, as their students show the greatest frame of mind to experience and express their emotions or sentiments. Other degree studies that are also outside of the technical world follow it in the lowest positions on the alexithymia scale. These are Fine Arts (57.2) and Journalism (57.9).

Gender, order in the family and family size and personality

Gender and personality

The mean values in Neuroticism are clearly superior among women (12.7) compared to men (10.7) and on

TABLE 5. Scores on the Ylla alexithymia scale (YAS) and faculties

Degree studies	Alexithymia	
	Mean \pm SD	
Fine arts	57.2	7.6
Biology	58.5	7.2
Economy	59.3	7.9
Business	59.2	7.4
Physics	60	8.4
Geology	60	8.3
Engineering	62.5	8.7
Mathematics	58.2	9.2
Medicine	56.7	7.3
Chemistry	59.4	8.1
Telecommunications	61.4	7.3
Odontology	56.1	6.6
Journalism	57.9	7.9
Sociology	59.7	8.1
	p 0.001	

the Extraversion scale, the score is higher among the men (11.5) than the women (11.1). The women also score higher on the sincerity with which the questionnaire is filled out (table 6).

Gender of those interviewed is shown to be a determinant in the alexithymia score. Women score lower (56.7) than men (62.1).

Size and order in the family and personality

No relationship is observed between the number of children in the family and scores of the subject on extraversion, neuroticism and alexithymia. However, we do see a significant relationship between sincerity in the EPI and the number of siblings. The greater the number of siblings, the greater the sincerity. Among groups, differences have been observed between subjects of families with 4 or more children and the rest. The subjects of these large families present higher sincerity than the only children and those coming from families having 2 or 3 children (table 7).

There is a relationship between the variable of order of children and scores on extraversion and sincerity. We

TABLE 6. Relationship between gender and scores on the Eysenck question (EIP) Ylla alexithymia scale (YAS)

Gender	Neuroticism	Extraversion	Sincerity	Alexithymia
	Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD
Men	10.7 4.2	11.5 3.8	6.6 1.5	62.1 8.1
Women	12.7 4.1	11.1 3.8	6.9 1.3	56.7 7.2
	p 0.001	p 0.001	p 0.001	

TABLE 7. Means in variables of personality per number of children

	One child	Two children	Three children	Four or more children
Extraversion	11.3	11.2	11.4	11.3
Neuroticism	12.1	11.9	11.8	11.8
Sincerity*	6.7	6.8	6.8	6.9
Alexithymia	59.3	59.1	59	58.8

* p 0.05 (4 or more children with 1, 2, 3 children).

have not found a relationship between birth order, and neuroticism and alexithymia.

In regards to extraversion, it is observed that the older children are less extraverted than the intermediate and youngest ones in large families.

In regards to sincerity, the youngest and intermediate ones from large families obtain the highest scores in sincerity (table 8).

CONCLUSIONS

1. There is a greater percentage of women in all the careers except Engineering. The female presence is more outstanding in Medicine, Odontology and Fine Arts. In Fine Arts and Journalism, there are more intermediate and youngest siblings of large families.
2. In Medicine and Fine Arts, there is a lower number of only children and a larger number of children from large families, above all, of intermediate siblings and also the oldest in the case of Medicine. The oldest siblings go more to engineering.
3. The career studies of Medicine and Odontology have lower scores in alexithymia, followed by Fine Arts and Journalism. The most technical careers, such as Engineering, are those that present greater alexithymia. Medicine and Odontology, followed

TABLE 8. Means of personality measured by the EPI sibling

	U	OL2	OL3	S2	S3	I3	N
Extraversion*	11.3	11.2	11.1 S3 I3	11.3	11.6	11.4	5,574
Neuroticism	12.1	11.9	11.6	12	12	11.8	5,702
Sincerity	6.7	6.7	6.7 S3 I3	6.8	6.9	6.8	5,854
Alexithymia	59.3	59.1	59.1	59	58.6	58.9	5,980

O: only child; OL2: oldest of two siblings; OL3: oldest of three or more siblings; S2: smallest of two siblings; S3: smallest of three or more siblings; I3 or more: intermediate of three or more siblings. *p 0.05 (OL3 with S3 and I3). **p 0.001 (OL3 with S3 and I3).

by Mathematics and Journalism, obtain the highest scores in Neuroticism. The students from the Engineering Faculties obtain the lowest Neuroticism. The most extroverted students are those from Journalism, Chemistry, Economy and Odontology.

4. University women appear as more neurotic than the men and the latter are more alexithymia than the women.
5. The youngest, from large families, present typical personality characteristics, pointing to greater extraversion and sincerity. Compared to them, the older siblings are more introverted and less sincere. Only children are also less sincere than the youngest siblings.

DISCUSSION

We have attempted to scientifically approach the question of whether being born with a specific gender, in different position in the family and/or the size of it somehow determines our lives and our way of being. We start with the basic idea, so well defined by Kandel²⁹, that has been mentioned by Dr. Ylla, that the environment influences the development of personality and that the family is our fundamental environment in the first years. We know how these first years have an influence, how important they are during our lifetime. Within the family, we could find many variables. Family size and birth order are two of them. Adler had already dedicated his attention to birth order and wrote on this subject. Many other authors also did so afterwards.

1. The first initial idea, that the order of sibling or of birth contributes to the development of different personality traits, has been verified in our study. The type of studies chosen by the subjects, variables of stable personality, and other situational variables related to mental health and some behavior habits are different according to order of birth.
2. When trying to specify which are the differences between siblings, and to see if we coincide with previous investigations, we come up against several questions, which on the other hand, are inherent to the general investigation.
 - In the first place, the difference of what is measured, the instrument used.
 - In the second place, the variables handled are not always identical.

We can say, at this point, that we coincide with Eisenman³ and others, who state that the first borns would be more intellectually oriented and we also agree with Adler (1926) who spoke about the high concept that the

first borns had of themselves and of their conservatism. The fact that they study more engineering can be interpreted as a finding that goes along the same line. Even the greater introversion can indicate a more intellectually oriented personality to us. This could be explained because the older sibling has greater contact with the adult world, is closer to the parents and surely to other persons whose are much older than them. The youngest middle sibling, even when in contact with these adult persons, is going to have one sibling or more next to him, that are similar in age, who, undoubtedly, will exert a greater influence. Furthermore, the parents probably tend to place more expectations, illusions, and demands on the first child (above all and up to now if it is a male), partly due to lack of experience and partly because they dump all their narcissistic needs on the child in the hopes that this first child will be their continuation or capable of performing which they wanted to and could not do. They give the child more responsibility, with more energy and severity, aspects that decrease with the following children more surely the greater the distance in years that exists.

In relation to the size of the family, we have mentioned contradictory results of previous investigations regarding the supposed benefits of a small or large family size. Falbo and Polit and Mellor reached the conclusion that a small family size has advantages. We have not found differences in personality traits between children of small and large families. This fact could be explained by a greater control of the parents towards their children when the family size is smaller, considering it from the point of view of the children as a greater acceptance of the ideas of their parents on the children's care.

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