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Structure of kinship in consanguineous marriages in aragonese oriental pyrenees

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RESUMO

O presente trabalho analisa a estrutura de parentesco de uma população pirenaica de 1801 a 1980, através de 1816 dispensas eclesiásticas de consanguinidade. Os tipos envolvidos, definidos por categorias, de acordo com a frequência relativa do sexo dos ancestrais, foram estatisticamente analisados. A análise permitiu detectar a presença de factores biodemográficos e culturais que condicionam a distribuição das dispensas de consanguinidade por tipos. Os factores referidos são: 1) A diferença de idades entre marido e esposa, que aumenta a probabilidade de casos nos quais a idade do marido é maior que a idade da esposa. 2) O efeito da emigração e 3) A patrilinearidade.

Os dois últimos factores têm uma maior influência sobre os primos em segundo grau e primos em terceiro grau, o que causa uma frequência maior de ancestrais masculinos nas árvores genealógicas daqueles casamentos.

Palavras-chave: Consanguinidade; Heredograma; Estrutura familiar.

ABSTRACT

The present study, trough 1816 ecclesiasticals dispensations of consanguinity, deals with the kinship struture of pyrenaic population from 1801 to 1980. The types involved, defined in categories according to the relative frequency of males and femals ancestors, were statistically analyzed. This analysis allowed us to found out the presence of biodemographic and cultural factors which conditioned the distribution of ecclesiasticals dispensations in types. These factors are: first the difference between husband and wife ages that increase the probability of cases in which the husband's age is greater than wife's age. Second the effect of the emigration; and finaly a component of patrilinearity. These two last factors have more influence on second cousins, second cousins once removed and third cousins, what causes a higher frequency of males ancestors than females in the pedigree of these marriages.

Key-words: Consanguinity; Pedigree; Family structure.

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INTRODUCTION

One of the advantages of analysing inbreeding by studying the ecclesiastical dispensations is the availability, in most cases, of the pedigree corresponding to the dispensed consanguineous marriages. In that way it is possible to study, not only the incidence of the kinship, but also the structure of the ways through which such kinship is transmitted, making possible the analysis of the distribution in types of the consanguineous marriages. The types are defined for each degree of inbreeding according to the possible composition of male and female lines of ancestors that are found between the common ancestors and the studied couple.

It has been studied an area of 2372 km^2 in Central Pyrenees which occupies the most septentrional portion of Ribagorza and Sobrarbe districts (Huesca, Spain), whose population among actually 9510 people, even though it was in 1800 of 25717 people, so emigration is a constant characteristic all along the studied period. Its situation in the highest and most inaccesible part of Pyrenees imposes some life conditions strongly marked by the environment (Geografia de Aragón, 1981).

The economy is based on agricultural and cattle breeding activity. Its social pattern is closely relate to the economy, and it has remained unaltered until recent times (COMAS and PUJADAS, 1985). The family, associated to the «house» as an institution, is the basic unit of that pattern. The family of this population is composed by three generations: an elder couple, a young couple and their descent. Among the last ones, only one of them will inherit the totality of the landed property, so it will keep in undivided. The rest should emigrate or remain unmarried in the «*house*». The heir is usually a man, but in some (26%) of the cases it is a woman (LISÓN, 1986).

The isolated character of that population has, otherwise, favoured a high level of consanguinity, which has notably increased: after a phase of low values (during the period 1776-1800, ($\alpha = 0.187 \times 10^{-3}$), kinship increase clearly and reaches its maximum during the period 1901-1925 ($\alpha = 4.562 \times 10^{-3}$), decreasing lately until 1951-1975 that α equals 2.901×10^{-3}.

MATERIAL AND METHODS

The information was obtained from the ecclesiastical dispensations registered in the Barbastro Diocese. Data from 1818 dispensations were studied and this dispensations were distributed in several degrees: 23 cases of oncle with nephew (degree I), 339 of first cousins (degree II), 140 of first cousins once removed (degree III), 608 of second cousins (degrees IV), 247 of second cousins once removed (degree V) and 461 of third cousins (degree VI). All of them corresponded to relative with two common ancestors. All that dispensations were applied from the parishes belonging to the region studied during the period 1801-1980. About degrees V and VI, there are not data available since 1917, because from that date onwards dispensations were not necessaries for these degrees.

TABLE 1. *Distribution of registered dispensations, per degrees and types of pedigrees*

DEGREE	TYPE	N	TYPE	N	TYPE	N	TYPE	N	TYPE	N	TYPE	N	TYPE	N	TYPE	N
I	101	12	102	9	103	2	104	0								
II	201	85	202	101	203	62	204	91								
III	301	18	302	6	303	21	304	8	305	16	306	15	307	15	308	13
	309	5	310	9	311	2	312	3	313	0	314	5	315	2	316	2
IV	401	36	402	34	403	40	404	47	405	27	406	29	407	38	408	46
	409	27	410	43	411	32	412	60	413	33	414	23	415	36	416	57
V	501	2	502	2	503	4	504	4	505	2	506	1	507	5	508	2
	509	3	510	10	511	8	512	3	513	4	514	6	515	3	516	1
	517	7	518	9	519	4	520	6	521	4	522	3	523	4	524	8
	525	11	526	4	527	6	528	3	529	8	530	11	531	7	532	12
	533	3	534	2	535	0	536	2	537	0	538	0	539	0	540	0
	541	2	542	1	543	1	544	2	545	0	546	1	547	0	548	3
	549	4	550	6	551	2	552	3	553	5	554	5	555	1	556	2
	557	7	558	7	559	3	560	6	561	1	562	6	563	2	564	3
VI	601	5	602	7	603	8	604	6	605	11	606	6	607	5	608	7
	609	6	610	8	611	8	612	7	613	8	614	10	615	11	616	11
	617	9	618	5	619	6	620	4	621	6	622	8	623	7	624	9
	625	2	626	5	627	4	628	5	629	9	630	7	631	4	632	10
	633	5	634	11	635	4	636	6	637	7	638	6	639	9	640	8
	641	2	642	9	643	6	644	10	645	10	646	7	647	6	648	12
	649	4	650	4	651	6	652	3	653	5	654	7	655	6	656	12
	657	4	658	11	659	9	660	8	661	12	662	5	663	6	664	17

It is found in the dispensations a pedigree which shows the type of inbreeding that relates the couple according to the sex of ancestors of the bride and groom until the common ancestor couple. We have codified these types following the system used by GUAL (1984). Each type is represented by three figures: the first ones shows the degree, and the rest the order of sequency that the type occupies within the degree. The sequency of types within the degrees is usually represented (VALLS, 1982). That work has been carried out from the observed frecuencies of each type, which are shown in Table 1, following the descripted nomenclature.

RESULTS AND DISCUSSION

The inbreeding obtained in that population in the generations inclued in the studied period, overpasses the values that should be expected if consanguineous marriages were produced exclusively at random (PALACIOS-ARAUS,

1986). The fact of existing, within the married couples, a selection in favour to marry a relative implies the existence of a «*recognition of the kinship*», which could be influence by the ways, masculine or feminine, through which it is transmitted.

General analysis

The types of each degree were grouped depending on the number of masculine and feminine lines included between the common ancestors and the studied couple. The differences obtained with respect to a random distribution, using the X^2 test, were evaluated. The results are shown in Table 2.

The differences observed in degrees I, II, and III (oncle with nephew, first cousins and first cousins once removed) were not significant; nevertheless they were clearly significant in degress IV, V and VI (second cousins, second cousins once removed and third cousins). PETTENER (1985) found similar results in a population in the Appennines.

In all degrees in which differences are significant, the cases with majority of masculine lines are increased, being decreased those with majority of feminine lines. In those degrees it is clear that the category that includes the type or types in which there are no feminine lines (416, 532, 564 and 664), is clearly favoured. Those differences are not produced with the same intensity

TABLE 2. *Influence of total number of male/female ancestors*

DEGREE	MALE/FEMALE COMPOSITION OF PEDIGREES							X^2	d.f.	p
I	**0/1**	**1/0**								
O	14	9						1.09	1	.296
E	11.5	11.5								
II	**0/2**	**1/1**	**2/0**							
O	85	163	91					.71	2	.701
E	84.7	169.5	84.7							
III	**0/3**	**1/2**	**2/1**	**0/3**						
O	23	54	48	15				2.15	3	.473
E	17.5	52.5	52.5	17.5						
IV	**0/4**	**1/3**	**2/2**	**3/1**	**4/0**					
O	36	128	222	165	57			14.64	4	.005
E	38	152	228	152	38					
V	**0/5**	**1/4**	**2/3**	**3/2**	**4/1**	**5/0**				
O	5	30	81	67	49	15		14.07	5	.015
E	7.7	38.6	77.2	77.2	38.6	7.7				
VI	**0/6**	**1/5**	**2/4**	**3/3**	**4/2**	**5/1**	**6/0**			
O	5	38	85	140	121	55	17	24.43	6	.000
E	7.2	43.2	108	144	108	43.2	7.2			

and opposite sense in the types in which all the ancestors are women (401, 501, 533 and 601). This could be due to a specific cause related to those types. This influence is possibly related to the cases in which the landed property is inherited by a woman; in such situations a consanguineous marriage of some of these types would allow keeping the family name. In close relationship, that phenomenon would be partially (degree II) or completely (degrees I and III) masked by the influence of age.

If that factor is eliminated, — excluding the types upon which it influences, so the degrees IV, V and VI will be reduced to 15, 62 and 63 types respectively —, it is still observed a tendency to make more likely the predominance of masculine lines than the feminine ones, but the differences are less marked.

To make a wider and more exhaustive analysis of that tendency the types were grouped following two criteria: the first one, which we will denominate vertical, consists in grouping the types depending on the composition of the lines of descent; the second one, called horizontal, groups the types depending on the compositions of the different generations.

Vertical analysis

The grouping of types was different for equal or unequal degrees of kinship. In equal degrees it was considered the differences between the number of feminine lines since the common ancestors till the husband and till the wife. In enequal degrees two categories were distinguished, depending on whether the husband or the wife were a generation nearer the common ancestors. In degrees III and V (first cousins once removed and second cousins once removed) it was made in each of those categories an analogous grouping to the described for equal degrees of kinship. The obtained values were compared using the X^2 test. The results are shown in Table 3.

In all cases studied it is evident the influence of the composition by ages of the consanguineous marriages, with significant older ages of males, fact that has already been found in this group of marriages (PALACIOS-ARAUS, 1986). The most clear differences are found in unequal degrees (I, III and V), in which the categories in which the husband belongs a generation previous to that of this wife (so being more likely to be older than her), have a higher frequency than that expected at random.

Habitually, women have children at earlier age than man, so the predominance of masculine lines in the ancestors in one of the members of the couple favours him being younger. The opposite efect is the predominance of feminine lines.

Nevertheless, even though the population seems to favour the marriages in which the man is older than the woman, an excesive difference in the ages is not desirable. This can be verified analysing the composition of the lines analysing the composition of the lines in types of degrees III an V; there is a predominance of female ancestors in the line which includes a greater number of generations. In the case of nephew-aunt corresponding to degree III, the categories of — 1 and 0 women and that of 1 and 2 women were grouped to diminish the error of the test.

TABLE 3. *Influence of transmission lines of kinship. -2W, -1W, etc, are the arithmetical differences between the number of women in husband line and wife line*

DEGREE		PEDIGREE COMPOSITION							X^2	d.f.	p
I		Uncle-niece		Aunt-nephew							
	O	21		2					15.97	1	.000
	E	11.5		11.5							
II		**—1W**	**0**	**1W**							
	O	62	176	101					9.1	2	.011
	E	84.7	169.5	84.7							
III		Uncle-niece		Aunt-nephew							
	O	112		28					50.4	1	.000
	E	70		70							
III (Uncle-niece)											
		—1W	**0**	**1W**	**2W**						
	O	16	48	40	8				7.14	3	.068
	E	14	42	42	14						
III (Aunt-nephew)											
		—2W	**—1W**	**0**	**1W**						
	O	2	4	13	9				9.14	1	.002
	E	3.5	10.5	10.5	3.5						
IV		**—2W**	**—1W**	**0**	**1W**	**2W**					
	O	33	113	235	180	47			18.16	4	.011
	E	38	152	228	152	38					
V		Uncle-niece		Aunt-nephew							
	O	167		80					30.6	1	.000
	E	123.5		123.5							
V (Uncle-niece)											
		—3M	**—2M**	**—1M**	**0**	**1M**	**2M**				
	O	11	23	68	46	17	2		13.4	5	.020
	E	5.2	26.1	52.2	52.2	26.1	5.2				
V (Aunt-nephew)											
		—2M	**—1M**	**0**	**1M**	**2M**	**3M**				
	O	0	5	16	30	22	7		25.56	5	.000
	E	2.5	12.5	25	25	12.5	2.5				
VI		**—3M**	**—2M**	**—1M**	**0**	**1M**	**2M**	**3M**			
	O	4	39	99	137	123	52	7	7.64	6	.266
	E	7.2	43.2	108	144.1	108	144.1	7.2			

In degree II, IV and VI (first, second and third cousins) there is an over representation of the husband's female ancestors and of wife's males ones. This agrees with the already exposed explanation of the tendency to facilitate marriage with a determined composition of ages.

These differences were not detected in the general analysis because they did not affect the absolute number of feminine and masculine lines, but they are conditioned by its position among the husband's or wife's ancestors.

Horizontal analysis

To study the inbreeding transmission lines, considering the influence in which they are found as a conditioning factor of the structure of the inbreeding, the types were grouped within each generation (of each degree) in the three categories: both lines are transmitted by feminine line, both by masculine line or one by feminine line and the other by masculine line. In the lines defined in that way the influence of age is eliminated. Like in the other cases the X^2 test is used as a way to test the obtained results. The results are shown in the Table 4.

In degrees II and III, (first cousins and first cousins once removed), in X^2 test, the differences are not significant.

In the cases corresponding to degrees IV, V and VI (second cousins, second cousins once removed and third cousins), in all generations the number of couples that imply an inbreeding transmission through two masculine lines is bigger than these in which it is done through two feminines lines. That phenomenon is clearly stressed in some generations, being nearly unnoticed in others; that is why considering it as whole, as it was done in the general analysis, its incidence were not detected.

The factors whose interaction could justify the obtained results are, at least, two: the atraction of the inbreeding and the geographical distance between the two members of the couple.

The atraction of the inbreeding in near relatives, that would include degrees I, II, and III, would be independent of the transmission lines and marked enough to avoid the influence of the distance. That situation would explain that the obtained differences are not significant.

In the cases corresponding to degrees IV and VI, it is observed a clear influence of the transmission lines in the second generation (the couple's parents), which favours the cases with masculine lines against these of feminine lines; that is to say there is a greater possibility of a consanguineous marriage to take place between people who are relatives by their father's families than if they are by their mother's. The X^2 value in that generation is 11.88 for degree IV and 6.39 for degree V both with two degrees of freedom.

Those results show a certain tendency towards patrilinearity, which is a pattern of the population's social structure (MURDOCK, 1949; NAROLL, 1973; among others). It is interesting the comment , about that subject, made by

TABLE 4. *Influence of generation composition*

DEGREE		PARENTS			X_i^2	p	GRANDPARENTS			X_i^2	p	GREAT-GRANDPARENTS			X_i^2	p
II		**W-W**	**W-M**	**M-M**												
	O	85	163	91	0.71	.701										
	E	87.7	169.5	84.7												
III		**W-W**	**W-M**	**M-M**												
	0	44	63	33	3.18	.204										
	E	35	70	35												
IV		**W-W**	**W-M**	**M-M**			**W-W**	**W-M**	**M-M**							
	0	126	295	185	11.88	.003	135	318	155	2.60	.272					
	E	152	304	152			152	304	152							
V		**W-W**	**W-M**	**M-M**			**W-W**	**W-M**	**M-M**							
	O	51	118	78	6.39	.041	44	131	72	7.26	.026					
	E	61.7	123.5	61.7			61.7	123.5	61.7							
VI		**W-W**	**W-M**	**M-M**			**W-W**	**W-M**	**M-M**			**W-W**	**W-M**	**M-M**		
	0	114	222	125	1.15	.563	102	230	129	3.16	.206	84	225	152	20.32	.000
	E	115.3	230.5	115.3			115.3	230.5	115.3			115.3	230.5	115.3		

COMAS and PUJADAS (1985) refering to the population of the Pyrenees of Aragon:

«The association of name, ancestry, and patrimony, as it is shown in the nickname system and in the minor toponymy, is assimil since infantry, existing efficient mechanism of socialization that contribute to strengthen it.»

The geographical separation of the relatives makes more difficult their marriage. Taking into account the greater mobility of women in that population (BAILO *et al*, 1986) because rarely they remain linked to the landed property, it is expected that the transmission of relationship through feminine lines will be less frequent through masculine lines (BARRAI *et al*, 1962). Otherwise, the most far away is the generation in which the separation of the relatives is produced, the less likely will the marriage of their descent take place; so, the nearest to the common ancestor a female line is, the most important will the consequences of distance be.

Among second cousins that phenomenon is not observed. In the second generation (grandparents of the couple), the differences are not significant (the X^2 value is 2.605 with 2 d. f.); possibly the attraction of the inbreeding specially by paternal line, is rather strong as to give to the distance factor a secondary role.

In marriages corresponding to second cousins once removedd the X^2 value, 7.268 2 d. f. is significant, showing the influence of distance among the relatives. The fact that the differences in the first generation are also significant, allows the interpretation of the pattern obtained in that degree as a transition between the one of degree IV (second cousins), conditioned by the attraction of the inbreeding (stressed when it is by paternal line) and that of degree VI (third cousins), conditioned, as it will be shown later, by the influence of distance. That gradient is specially interesting since it remarks the continuity of the influence of both factors as the degree of inbreeding diminishes.

The results obtained in the analysis of the types corresponding to degree VI can be interpreted, as it was noted before, as a consequence of the distance factor. The X^2 values in generations 1, 2 and 3 are respectively 20.32, 3.16 and 1.15; all of them 2 d. f. In that degree the attraction of the inbreeding, by paternal or by maternal line, would occupy a secondary role with respect to the influence of distance, resulting unnoticed. On one hand, the number of relatives availables descending from feminine lines is lesser than that descending from masculine lines because the migration has a greater influence of women. In the three generations the frequency of types with double masculine is higher than that of double feminine lines. On the other hand, the generation in which more differences are found (the great-grandparents) is the one that is more far away from the studied couple and so the one that could imply an earlier loss of contact between both families, This could diminish the probability of taking place the consanguineous marriage.

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