

Ethnicity and Biodemographic Structure in the Arbëreshe of the Province of Cosenza, Southern Italy, in the XIX Century

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ABSTRACT

Cultural and environmental factors interact in determining the genetic structure of human populations. Bio-demographic investigations of ethnic minorities are able to disentangle the influences that these two components have on the evolution of the genetic structure of a population. The ethnic minority of the Arbëreshe of the province of Cosenza (Calabria, southern Italy) is analyzed in this paper and its bio-demographic structure in the early 1800s is compared with that of neighboring Italian populations. The data derive from surnames recorded in the birth registers of the 19 Arbëreshe municipalities of the province of Cosenza and in 5 non-Arbëreshe municipalities of the same province. Isonymy and repeated pairs of surnames are used to analyze the bio-demographic structure of these populations, while analysis of isonymic relationships is used to investigate the variability between populations. Higher values of marital isonymy and subdivision into subpopulations characterize the Arbëreshe populations with respect to their non-Arbëreshe neighbors. However, the high range of variability of these parameters suggests a strong influence of geographic location on the marriage pattern of each community. At the same time, cultural differences linked to group identity had a strong impact in limiting marriage exchanges between the different ethnic groups living in the province of Cosenza in the early 1800s. In fact, the analysis of isonymic relationships demonstrates that geographic location shaped kinship patterns among the Arbëreshe communities, but it also shows that the non-Arbëreshe neighbors formed a clearly separate reproductive cluster.

Key words: ethnicity, bio-demography, surnames, genetic structure, Arbëreshe

Introduction

Cultural and environmental factors interact in determining the genetic structure of human populations. For this reason, a human ecological approach becomes fundamental in investigating the genetic evolution of human populations, due to its multidisciplinary nature and integrative capabilities. Bio-demographic investigations link cultural elements, such as surnames and marriage systems, to characteristics of the environment in estimating the genetic evolution of a population in terms of inbreeding, population subdivision and isonymic relationships. Hence, such studies are at the interface of biological and cultural research.

The analysis of surnames has been particularly effective in the study of geographically isolated populations of

mountain areas of Europe. This is due to the smaller effects of biases inherent in surname analyses because of the reduced polyphyletic origin of the surnames and low immigration rates in this particular context. Mountain populations have been investigated in the French Jura¹, in central Spain^{2–4}, in the Pyrenees^{5–11}, in the Apennines^{12–15}, and in the French¹⁶, Italian^{17–23}, and Swiss Alps^{24–26}.

Only a few bio-demographic studies have addressed the impact of barriers that link cultural, behavioral and linguistic features of a population; in this paper, such barriers are considered to define the ethnicity of a group. Studies on the German-speaking Mocheni of the Italian Alps²¹ and the Arbëreshe (Albanian-speaking ethnic mi-

nority) of Basilicata^{14,27} and Calabria^{28–30} reveal how geographic barriers intersect with cultural barriers in delimiting the reproductive isolation of a group; this is reflected in higher values of endogamy, inbreeding and subdivision into subpopulations. Ethnic isolates in mountain areas, like the Arbëreshe, are also characterized by delayed breakdown of the isolation with respect to other mountain communities.

The present study focuses on the Arbëreshe minority of the province of Cosenza, in the southern Italian region of Calabria. The Arbëreshe settled in this region between the end of the XV century and the beginning of the XVI century, finding hospitality in abandoned, unproductive and isolated areas of the Kingdom of Naples³¹. This condition of geographic marginality was coupled with high endogamic rates²⁹ and a strong sense of group identity, recognizable in the conservation of a distinct language and religious rite. This makes the Arbëreshe an ideal case study to investigate the effects of environmental and ethnic barriers on the evolution of the bio-demographic structure of a population.

The aim of the study is to address the possible interactions of ethnicity and environment in determining the evolution of the bio-demographic structure of the Arbëreshe population in the first two decades of the 1800s through the analysis of the birth registers of the 19 Arbëreshe municipalities of the province of Cosenza. Isonymy and repeated pairs (RP) of surnames are used to analyze the bio-demographic structure of these populations, while the analysis of isonymic relationships is used to describe the variability among populations. Our purpose is to investigate differential bio-demographic behaviors between the Arbëreshe populations and a sample of their non-Arbëreshe neighbors, with particular attention to the isonymic relationships between the two ethnic groups during the 1800s.

Materials and Methods

Population

The historical Albanian-speaking community, the Arbëreshe, is one of the most numerous linguistic minorities of Italy. This community originated from the migration of Albanians following the invasion of the Balkans by the Ottoman Empire, which occurred at the end of the XV and beginning of the XVI century and slowly ended with sporadic, and less substantial, migrations in the XVIII century³¹. Although the kingdom of the Two Sicilies welcomed these new populations within its borders, it settled them in isolated, abandoned and unproductive areas. Moreover, the economic situation of the region was not ideal for integration with the local populations, which grew hostile towards the Albanian populations³¹. Nevertheless, the quite numerous presence of Albanian-speaking communities in the province of Cosenza (Calabria, southern Italy) seems to have been strengthened by the marriage between Erina Castriota, a close relative of Giorgio alias »Skanderbeg« (Albanian leader and hero),

and Antonio Sanseverino, whose principalities included the medium and lower valley of the Crati River³³.

By the first fiscal census of the Kingdom of Naples in 1543, the Albanians living in the *Calabria Citra* were scattered in 45 villages and numbered 5,775 inhabitants³². This figure probably underestimates the actual population because the fiscal census of the time did not record wealthy families³⁴. Most of these settlements were made *ex novo*, others were represented by abandoned resettled villages. With time, part of the Arbëreshe population lost the Greek-Byzantine religious rite, the historical and cultural traditions and, in the end, the original language. Today, the Arbëreshe minority of the province of Cosenza that best preserves its social, religious and linguistic identity³⁵ persists in only 19 municipalities. Eight of them (Acquaformosa, Lungro, Firmo, S. Basile, Frascineto, Civita, Plataci and Castroregio) are in the mountain complex of the Pollino (northern part of the province) and 11 (Falconara, S. Benedetto, S. Martino, Cerzeto, S. Caterina, S. Sofia, S. Demetrio, S. Cosmo, Vaccarizzo, S. Giorgio, Spezzano Albanese) are scattered east and west of the middle and lower sections of the Crati River (central-southern part of the province) (Figure 1). They represent 46.3% of the 41 Arbëreshe-speaking municipalities in Italy³⁵, with a population of 38,018, i.e. 42.8% of the entire Albanian-speaking community (94,932 inhabitants) of Italy³⁶.

Data

The data used in this study are the surnames of the parents recorded in the Birth Registers of the Kingdom

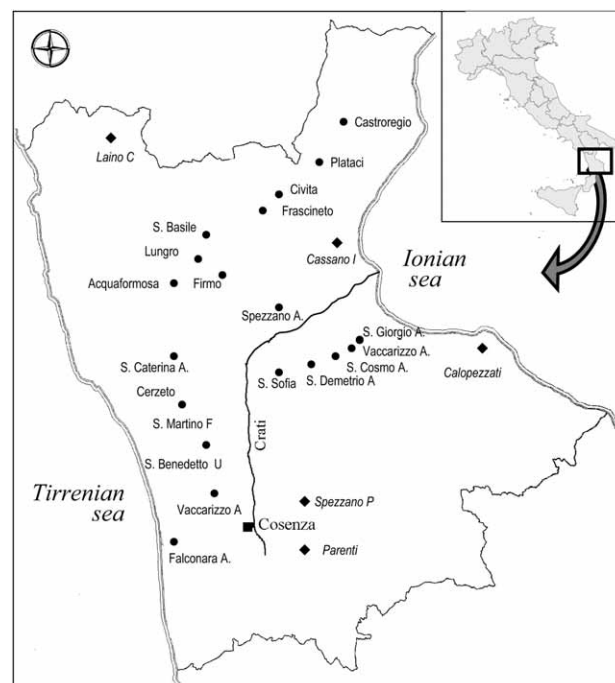


Fig. 1. Location of the 19 Arbëreshe populations (dots) and the 5 Non-Arbëreshe populations (diamonds) investigated in the Province of Cosenza, South Italy.

TABLE 1
 ISONYMY AND REPEATED PAIRS OF SURNAMES IN 19 ARBËRESHE MUNICIPALITIES AND 5 NON-ARBËRESHE PARISHES:
 EARLY XIX CENTURY

Population	Altitude (meters above s.l.)	Size (1815 census)	Number of Couples	Number of Unique Pairs of Surnames	Im	Ir	RP	RPr	(RP-RPr)/ RPr (%)
<i>Arbëreshe-Pollino area</i>									
Acquaformosa	756	1115	158	92	0.06329	0.08408	0.00693	0.00685	0.01244
Lungro	600	3497	490	351	0.02041	0.02449	0.00082	0.00062	0.31615
Firmo	370	1240	160	150	0.01875	0.01434	0.00039	0.00024	0.61119
S.Basile	540	1240	173	67	0.10405	0.13425	0.01956	0.01790	0.09276
Frascineto	486	1802	243	189	0.03704	0.02838	0.00170	0.00080	1.13013
Civita	450	1475	224	195	0.03571	0.01796	0.00064	0.00037	0.75237
Plataci	930	1229	138	83	0.08696	0.07183	0.00603	0.00506	0.19156
Castroregio	819	528	65	44	0.06154	0.06556	0.00721	0.00446	0.61558
<i>Arbëreshe-Crati River (West)</i>									
Falconara Albanese	602	1677	203	164	0.02463	0.02172	0.00102	0.00043	1.36295
S. Benedetto Ullano	450	1404	200	185	0.02500	0.00753	0.00045	0.00007	5.29326
S. Martino di Finita	525	1209	155	125	0.05161	0.03330	0.00201	0.00115	0.74978
Cerzeto	455	1628	215	175	0.03721	0.02235	0.00117	0.00052	1.27817
S. Caterina Albanese	472	1245	183	160	0.01639	0.01490	0.00078	0.00026	2.06108
<i>Arbëreshe-Crati River (East)</i>									
S. Sofia d'Epiro	558	1107	197	141	0.04569	0.04824	0.00347	0.00225	0.53955
S. Demetrio Corone	521	1816	312	243	0.01923	0.01611	0.00089	0.00035	1.52770
S. Cosmo Albanese	448	552	63	46	0.03175	0.05014	0.00512	0.00246	1.08387
Vaccarizzo Albanese	448	888	180	144	0.01667	0.02497	0.00230	0.00075	2.08142
S. Giorgio Albanese	428	1000	121	84	0.05785	0.06912	0.00441	0.00447	-0.01338
Spezzano Albanese	320	1972	277	227	0.02166	0.00953	0.00065	0.00010	5.44973
<i>Non Arbëreshe</i>									
Calopezzati	217	1356	297	281	0.00337	0.01127	0.00018	0.00016	0.12244
Cassano	250	4932	2038	1937	0.00245	0.00310	0.00003	0.00001	1.58561
Laino Castello	419	1430	641	451	0.02184	0.02702	0.00078	0.00075	0.05026
Parenti	820	1090	521	385	0.04031	0.02503	0.00086	0.00069	0.24261
Spezzano Piccolo	800	1164	224	193	0.00893	0.02248	0.00056	0.00054	0.03385

of Naples, preserved in the State Archive of Cosenza. The records from 1809 to 1817 were collected for each of the 19 municipalities (Table 1), for a total of 5,069 complete birth records. The surname and first name of the parents, their age and profession were collected along with the name of the newborn. Couples with more than one newborn in this period were considered only once, leading to the elimination of 1,147 records. The comparison of 8 fields characterizing each couple guaranteed the selection of unique couples. If the surnames and first names of two different couples were identical, we proceeded to compare the age of the parents and their profession. This procedure was sufficient to safely select only unique couples. 165 records were eliminated because the first name or surname of one or both of the parents were missing, giving a total sample of 3,757 couples.

The data allow the analysis of a total of 7,514 individuals who effectively had offspring in the first half of the XIX century. The census for the year 1815 recorded 26,624 inhabitants in the 19 villages under study. Hence, our sample represents about 28.2% of the total population. Considering the non-fertile portion of the population (and even considering the existence of second marriages or illegitimate offspring), our sample represents a significant portion of the population that affected the genetic evolution of the investigated communities. Surnames of the parents were carefully revised (by standardization of the spelling) to avoid underestimation of isonymy and isonymic relationships during the analysis.

The present sample offers several advantages. First, it represents a snapshot of a period preceding the second

decade of the 1800s, allowing us to estimate the impact of a reproductive behavior adopted by the mates of the previous generation on the newborn generation of the period under study. Second, by focusing on the reproductive pool of the population, we analyze the group that effectively influenced the genetic evolution of the population. Third, our data are not affected by the bias introduced with the custom of virilocal migration, which affects data deriving from marriage records.

This data was then compared with data from 3,721 marriage records collected in 5 non-Arbëreshe parishes (Calopezzati, Cassano, Laino Castello, Parenti, Spezzano Piccolo) of the province of Cosenza between the XVIII and XIX century and analyzed in a previous study³⁷. Surname analysis based on marriage records has been widely applied (Crow and Mange 1965; Lasker 1985; Colantonio et al. 2003) and has proved effective in estimating the genetic characteristics of populations, as well as inter-population relationships. The fact that we are comparing sets of surnames from marriage records and birth records should not introduce a bias into our analysis. Both sets of surnames and couples are large and are representative samples of the investigated communities. They also represent a limited window of time, characterized by the same historical period, socio-economic settings and environment.

Bio-demographic methods

Marital isonymy (Im) was calculated as the proportion of marriages between groom and bride with the same surname, and the random isonymy (Ir) as:

$$Ir = \sum(Si1Si2)/(\sum Si1)(\sum Si2),$$

where $Si1$ is the number of i th surnames in the *male* lineage and $Si2$ the number of the same surname in the *female* lineage.

The study of repeated pairs of surnames was based on the original formula proposed by Lasker and Kaplan³⁸:

$$RP = \sum[Sij(Sij - 1)/N(N - 1),$$

in which Sij is the number of couples where the groom's surname is i and the bride's surname is j and N is the sum of Sij over all surname pairs. We calculated the expected RP (RPr) by applying the analytical method of Chakraborty³⁹.

The percentage of the excess of RP above RPr was used to compare the different values of the subdivision of the population, as proposed by Relethford⁴⁰.

Isonymic relationships among the Arbëreshe population and between the Arbëreshe and the sample of non-Arbëreshe were studied as a relative measure of affinity; Lasker's⁴¹ coefficient Ri was used:

$$Ri = \sum(Ns1Ns2)/2N1N2,$$

where $Ns1$ is the number of surnames in population 1 and $Ns2$ is the number of the same surnames in population 2, and $N1$ and $N2$ are the respective sizes of the two populations. The standardized coefficient Hab proposed by Hedrick⁴² was also applied for comparison. The non-

Multidimensional Scaling⁴³ and the Neighbor Joining Tree technique⁴⁴ were applied to Ri and Hab matrices to test the independence of the results from the methods used.

Results

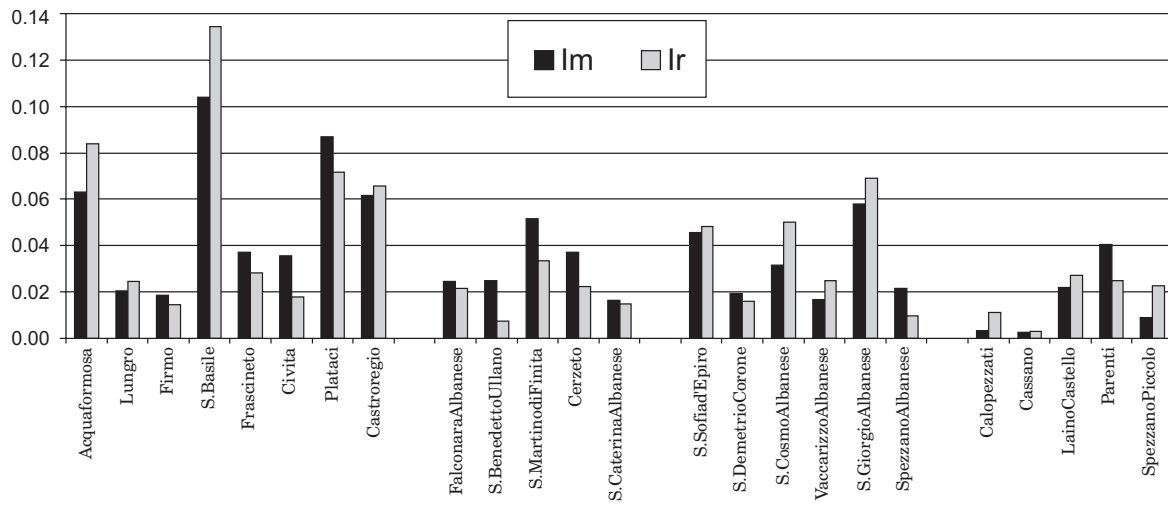
Within-population structure

Table 1 and Figure 2 represent the values of marital and random isonymy and repeated pair isonymy in the sampled populations. Among the Arbëreshe populations, the highest values of marital and random isonymy are in the mountain communities of the Pollino area, with peaks in S. Basile and Plataci ($Im = 0.104$ and 0.087 , $Ir = 0.134$ and 0.718 , respectively). The lowest values are in the Arbëreshe distributed around the plains of the Crati River, with the minimum values of marital isonymy recorded in S. Caterina Albanese ($Im = 0.0164$, $Ir = 0.0149$) and Vaccarizzo Albanese ($Im = 0.0167$, $Ir = 0.025$). The non-Arbëreshe populations generally show values of marital isonymy one decimal point lower than the Arbëreshe, with two exceptions: Laino Castello ($Im = 0.0218$, $Ir = 0.027$) and Parenti ($Im = 0.0403$, $Ir = 0.025$). Comparison of the observed values of marital and random isonymy reveals an »Ionian« pattern characterized by higher values of Im than Ir (observed in 8 of the 9 populations of the Pollino area and west of the Crati River on the side of the Ionian Sea); the Arbëreshe facing the Tyrrhenian Sea do not show such a marked pattern. The non-Arbëreshe populations, analyzed for comparative purposes, have higher values of Ir than Im with the exception of Parenti, an isolated village at 820 m a.s.l.

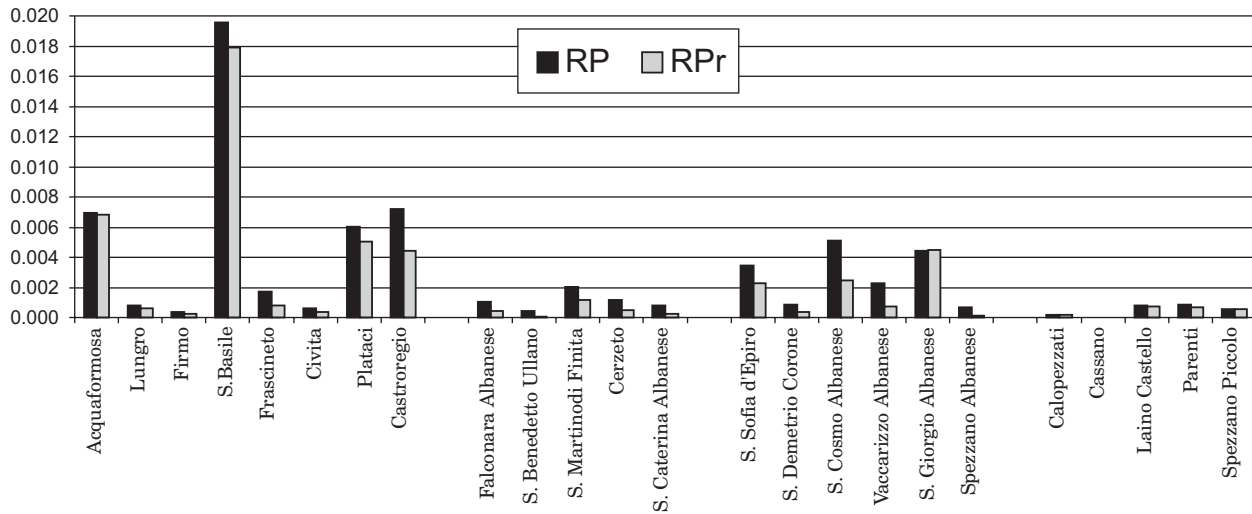
Repeated pair isonymy among the Arbëreshe varies between a maximum of 0.01956 in S. Basile and a minimum of 0.00065 in Spezzano Albanese. Castroregio, Plataci, S. Basile, Acquaformosa, S. Giorgio Albanese and S. Cosmo Albanese are the populations with the highest RP values. Despite the fact that RP varies significantly among these populations, its expected value is systematically lower, with the exception of S. Giorgio Albanese. Repeated pair isonymy is extremely low among the non-Arbëreshe populations.

Isonymic relationships

Figure 3 is a bi-dimensional representation of Lasker's Ri applied to the Arbëreshe of the province of Cosenza, represented via the method of multi-dimensional scaling. This measure of affinity shows the various populations clustering around four main groups. The clusters reflect their geographic locations. Group A includes the populations located east of the Crati River, group B the populations west of the Crati River, groups C and D the populations of the eastern and western sides of the Pollino area, respectively. Falconara Albanese and Spezzano Albanese cannot easily be attributed to any one of the identified clusters. This is not surprising since both populations are in geographic areas intermediate between the previous clusters: Falconara Albanese is farther south on the Tyrrhenian coastal mountain chain,



Arbëreshe - Pollino Area Arbëreshe - W. Crati river Arbëreshe - E. Crati river Non Arbëreshe



Arbëreshe - Pollino Area Arbëreshe - W. Crati river Arbëreshe - E. Crati river Non Arbëreshe

Fig. 2. Marital isonymy and Repeated Pairs of surnames (RP and RPr) in 19 Arbëreshe municipalities and 5 non-Arbëreshe parishes: Early XIX century: Im - marital isonymy, Ir - random isonymy.

while Spezzano Albanese is between the Pollino and the cluster of Arbëreshe west of the Crati River. All the applied indexes and multivariate methods give similar results, confirming the robustness of the detected affinity patterns.

Discussion

The data used in our analysis, based on birth registers and not on marriage registers as is usual in bio-demographic investigations, eliminates biases related to viri-local migration, thus offering a picture that is the direct reflection of the biological evolution of the population. Moreover, exogamic marriages were rare during the historical period under study^{27,29}, reducing the effect of differential migration in the various populations analyzed in the different geographic contexts.

The results illustrate high variability of reproductive behavior among the Arbëreshe, which had genetic implications during the early 1800s. The high values of marital isonymy and values of repeated pair isonymy are higher than expected in conditions of random mating, determining an overall increase in the homozygosis of these populations. However, within this ethnic group, high values of marital isonymy coexist with very low values, as in the case of Firmo or S. Caterina Albanese, values as low as those found in the non-Arbëreshe populations. This pattern can be related to geographic and demographic characteristics of the different communities. Populations at high altitudes and/or in isolated valleys might show a higher incidence of isonymy (e.g. Plataci) than low-altitude populations well connected to the road network (e.g. Firmo). High migration rates and population size might work in the opposite direction, affecting the size of the population suitable for marriage and reproduction.

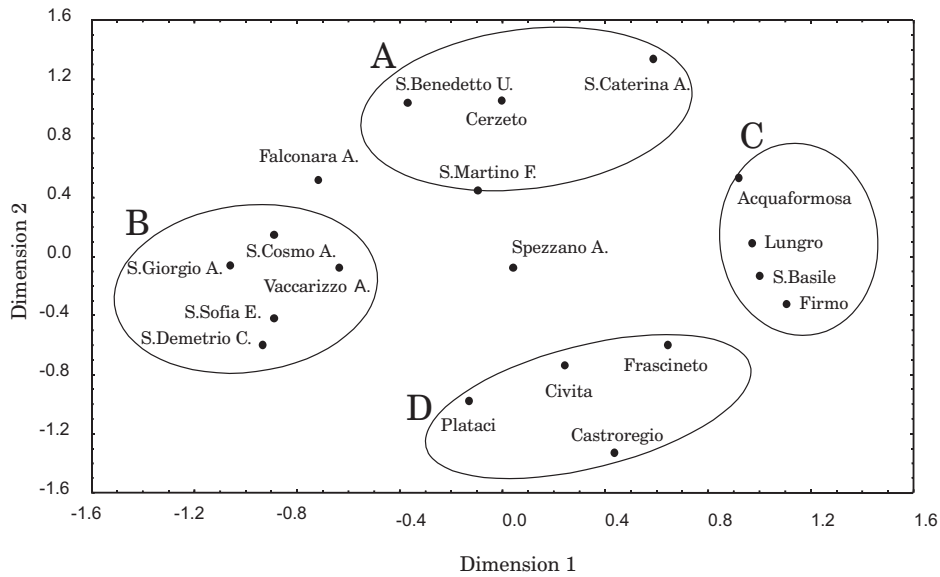


Fig. 3. MDS bi-dimensional representation of the isonymic relationships (Lasker Ri) in the 19 Arbëreshe municipalities.

Figure 3 shows that geographic location had a strong influence on the pattern of isonymic relationships among Arbëreshe communities, but it does not provide information about the impact ethnicity had on the isonymic relationships between Arbëreshe and non-Arbëreshe. Such relationships were likely affected by cultural elements, like the use of a different language, the use of the Greek-Byzantine religious rite, or possible within-village economic interests that would have reduced the permeability of the barriers between the two ethnic groups living in the province of Cosenza. This hypothesis was tested by comparing the 19 Arbëreshe populations with the 5 non-

Arbëreshe communities scattered in the province of Cosenza studied by Danubio et al.³⁷. The Neighbor Joining Tree in Figure 4 shows that the four clusters of Arbëreshe still reflect the relative geographic location of the villages (in agreement with Figure 3) but are clearly separate from the non-Arbëreshe of the province of Cosenza. If geographic location was the main factor conditioning marital choices, we would have expected the non-Arbëreshe populations to display relationships with the geographically contiguous Arbëreshe. Instead, the former group forms its own cluster, independently of the distant geographic location of the five communities. Figure 4 can

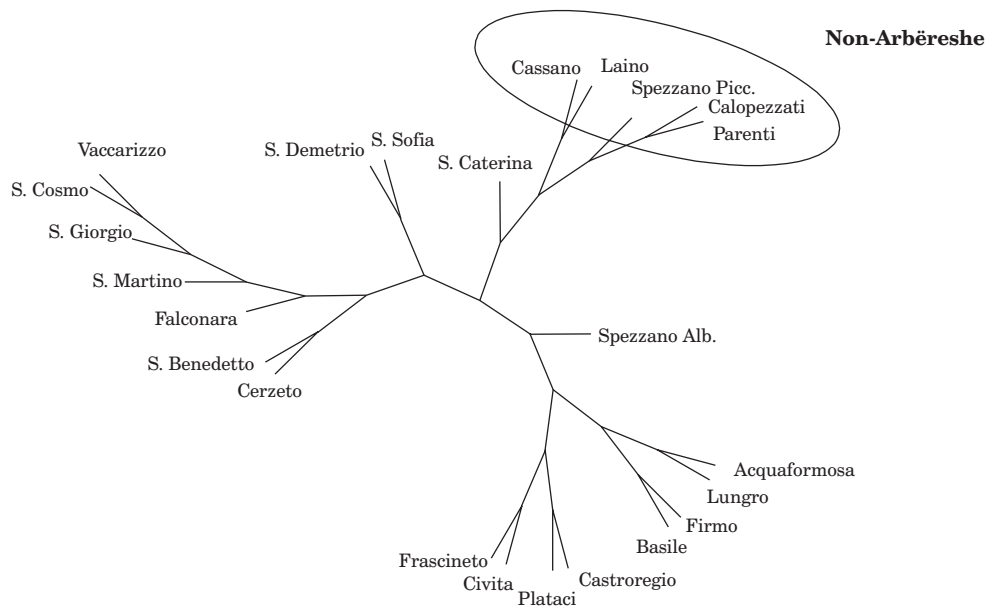


Fig. 4. Neighbor Joining Tree of isonymic relationships (Hedrick Hab) in the 19 Arbëreshe municipalities and 5 non-Arbëreshe parishes.

be taken as a representation of the interaction of ethnicity and environment in determining the bio-demographic structure of a complex population. In this case, ethnicity appears to be the principal factor differentiating the two ethnic groups of the province of Cosenza, while environmental elements can be considered important in explaining within-ethnic group variation.

In conclusion, this preliminary analysis outlines important elements of the bio-demographic structure of the Arbëreshe population of the province of Cosenza at the beginning of the XIX century. Generally higher values of marital isonymy and subdivision into subpopulations characterize these populations. In fact, the Arbëreshe appear to form within-group reproductive clusters, as shown by the differences between RP and RPr calculated in these populations. However, the high range of variability of these parameters suggests a very strong influence of geographic location on the marriage pattern of each community. At the same time, the analysis of isonymic relationships (Fig. 4) demonstrates that cultural differences linked to group identity had a strong impact in limiting marriage exchanges between the different ethnic groups living in the province of Cosenza in the early 1800s. The ethnic barrier identified in the present study and in previous research²⁷ appears not to be in place in recent times, as discussed by Biondi^{28,45}. Although Biondi's ana-

lysis was based on a different data source (marriage records derived from interviews of a sample of children enrolled in public schools of the study area), the results raise interesting questions about the evolution of the degree of isolation occurring in the province of Cosenza in different historical times.

Our results demonstrate that cultural and environmental factors interacted in determining the genetic structure of the investigated populations. Thus, an approach that integrates time-series bio-demographic investigations covering the last two centuries with a historical analysis of the socio-economic, cultural and environmental transformations of this specific geographic area is necessary. We believe that application of this approach to the case study of the Arbëreshe ethnic minority will provide an important contribution to an in-depth understanding of the interaction between ecological and cultural factors affecting the evolution of the genetic structure of isolated human populations.

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ETNIČKA I BIODEMOGRAFSKA STRUKTURA U ARBEREŠI, JUŽNOJ TALIJANSKOJ PROVINCIJI CONSENZE, U XIX STOLJEĆU

S A Ž E T A K

Interakcija kulturalnih i okolišnih faktora utječu na genetsku strukturu ljudskih populacija. Bio-demografskim istraživanjima etničkih manjina u mogućnosti smo proučiti utjecaj ove dvije komponente na evoluciju genetske strukture populacija. U ovom radu je analizirana bio-demografska struktura etničke manjine Arbereše, južne talijanske provincije Consenze sa početka 19 stoljeća. Rezultati su uspoređivani sa ostalom populacijom tog vremena na tom području. Podaci su uzimani iz knjiga rođenih u 19 Arbereških općina i u 5 gdje žive ostale populacije iste provincije. Izonimija i ponavljajuća prezimena upotrebljena su u analizi bio-demografske strukture ovih populacija, dok je odnos izonimije korišten za istraživanje varijabilnosti među populacijama. Više vrijednosti supružničke izonimije u subpopulacijama karakteristične su za Arbereše u odnosu na ostale populacije tog područja. Visoku varijabilnost ovih parametara sugerira geografska lokacija, na kojoj su takvi bračni običaji karakteristični za svaku zajednicu. Kulturne razlike povezane sa grupnim identitetom imaju snažan utjecaj na ograničenje brakova između različitih etničkih grupa u provinciji Consenza. Analize su pokazale kako je geografska lokacija zaslužna za srodstvene veze među Arbereškim populacijama, ali jednako tako i među ostalim populacijama na tom području.