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Published in:
European Sociological Review

Publication date:
1996

European Sociological Review, Vol. 12 No. 1, pp. 67–86

Post-war patterns of intermarriage in Australia: the Mediterranean experience

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The extent of ethnic intermarriage in culturally diverse societies reflects the extent of group assimilation versus group isolation and segregation. Applying descriptive and log-linear techniques of analysis to cohort data on intermarriage from the 1986 Census of Australia, we assess how far marriage choices are constrained within ethnic group boundaries; whether such choices have been relatively constant or variable over time; and the extent to which marriage choices parallel cleavages along occupational economic, educational, linguistic, and religious lines. We present marriage data for groups from several ethnic ancestries, including north-western Europe, eastern and southern Europe, eastern Asia and western Asia, and English-speaking countries. Focusing on groups from the Mediterranean basin who married after their arrival in Australia, we provide empirical evidence about weakening group barriers over time among many, but not all, ancestry groups. We conclude that the maintenance of strong in-marriage tendencies largely depends on the continuing flow of new immigrants.

Introduction

More than one theoretical and practical interest can motivate the analysis of ethnic intermarriage; for instance, the assimilation of minority groups and the ethnic stratification literature. To take the second example first, we find in countries of immigration like Australia, Brazil, Canada, the United States, and Israel (to mention only a few) that each wave of new settlers brings a distinctive mix of ethnic origins and socio-economic diversity. Refugees, for example, be they from eastern Europe, western Asia, or south-east Asia, usually have little if any choice in their decision to emigrate. They may be poorly prepared for resettlement, with few skills in the language of their adoptive country, no physical capital, and scant proof of any human capital they may have acquired before migration. They usually experience high initial rates of unemployment and enter the stratification order at the bottom of the occupational hierarchy (Wooden, 1990: 232–43). Economically motivated emigrants, like southern Europeans in Australia during the 1950s and 1960s, at least had some choice in their decision to migrate, even if they did face the double transition from peasant farms near rural villages to urban factories in large cities. Like refugees, they received low returns to their pre-migration schooling and experience. In this respect they differ from British, Dutch, and German settlers, who usually experienced little difficulty in adjusting to the Australian labour market. They came with better schooling and qualifications, and had a greater likelihood that their human capital would be readily accepted by local employers (Jones, 1992*b*: 31–44, 73, 93).

How far, if at all, immigrant disadvantage creates an enduring underclass has been a matter of debate. One American author (Gordon, 1964: 51) thought the possibility so likely that he coined a special term (the 'ethclass') to define the intersection of ethnic disadvantage with the class structure. Other commentators have seen immigrants as a reserve army of labour, as a secondary labour force, or as both (Castles and Kosack, 1973: 377). Lever-Tracy

and Quinlan's (1988: 11) thorough review of the Australian evidence concludes that these theories are largely irrelevant to the recent experience of immigrants in Australia. Despite a strong pattern of economic segmentation, immigrant workers have by and large been incorporated into the Australian working class without dividing or fragmenting it (Lever-Tracy and Quinlan, 1988: 306; for other empirical evidence, see Campbell *et al.*, 1991; Jones, 1992*b*).

To the extent that socio-economic inequalities restrict social interaction between groups, socio-economic stratification limits opportunities for out-marriage and encourages tendencies towards ethnic in-marriage. Therefore, as Hypothesis 1 below states, the rate of in-marriage will tend to be higher among groups that display greater socio-economic distance from the dominant ethnic group in a society. Below we present descriptive data on educational, occupational, and income inequality in contemporary Australia relevant to this expectation.

A second and perhaps more conventional strand of theorizing about ethnic intermarriage pertains to assimilation theory. In the United States, an enduring version of this theory is conveyed by the metaphor of the 'melting-pot',[1] the great crucible in which every ethnic stock was to fuse into an indistinguishable mass, especially in the great cities of new countries (Gordon, 1964: 121). Intermarriage is a central element in this fusion process, although debate continues about whether there is one or several 'melting-pots' (Kennedy, 1944, 1952; Peach, 1980*a*, 1980*b*; Kalmijn, 1991*b*; Lieberson and Waters, 1988, Chapters 7 and 8; McCaa, 1993). Australian scholars (Price and Zubrzycki, 1962*a*, 1962*b*; Price, 1982; Gray, 1987) have also used intermarriage as an index of assimilation, notwithstanding recent debate about how best to distinguish preferences for in-marriage from the opportunities for it (McCaa, 1989; Gray, 1989; Jones, 1991*b*). The analysis that follows adopts the more inclusive modelling approach rather than the construction of discrete indices. But whichever approach one favours, most observers would agree with Price's assertion that 'intermarriage is still the best measure of ethnic intermixture because it [intermarriage] breaks down ethnic exclusiveness and mixes the various ethnic populations more effectively than any other social process' (1982: 100).

The assimilation literature suggests a more general hypothesis about ethnic intermarriage, related to social distance of all kinds between groups. Groups exhibiting less social distance from the dominant group should marry out more frequently because they encounter fewer barriers to social interaction, including intermarriage. By definition, groups with similar residential, educational, occupational, religious, and linguistic characteristics have more in common with one another, a commonality likely to foster close social relations of which marriage is a prime example. In other words, Hypothesis 2 generalizes the hypothesis from stratification theory because it applies to all forms of social distance, not just socio-economic distance.

Finally, marriage within and across group boundaries of various kinds — regional, industrial, class, ethnic, and religious — can be seen as part of wider social processes of structuration and destructuration. Perhaps the most general statement of this theoretical position is that of Blau and Schwartz (1984) and their theory of cross-cutting social circles. A basic postulate in their theory is that 'people tend to associate with others located close to them in social space' (Blau and Schwartz, 1984: 14). At the same time, the more internally heterogeneous a group is, the more likely are its members to form external associations through marriage to members of other groups. In-group heterogeneity encourages out-group relations, subject to the proviso that out-group members with more homogeneous characteristics actually exist. In short, social distance (or heterogeneity) within groups promotes out-group associations and contributes to the social integration of diverse groups (Blau *et al.*, 1982: 58).

Whereas stratification theory and assimilation theory focus mainly on the social distance between groups, the Blau–Schwartz theory deals simultaneously with both between and within group diversity. We cannot, however, rigorously test their theory. For example, we cannot disaggregate our data geographically so as to replicate their analysis of metropolitan variation in marriage patterns. Also, we measure population diversity and social distance at the national rather than the metropolitan level, and at the group rather than the individual level. However, their theorems are couched in quite general terms. So there is no reason why our data cannot be used to illuminate them in so far as they pertain to social relations like marriage. None the less, because our substan-

tive and methodological concerns do diverge somewhat from theirs, we defer further theoretical conjecture in order to describe our own data and methods of analysis more fully.

Data and methods

The research reported here is an extension of earlier work on labour-market outcomes among women and men of different ethnic backgrounds (Jones, 1991*a*, 1992*b*). Some of this earlier research uses public-use matrix tapes that interrelate ancestry and other social and economic characteristics. The more analytical work on labour-market outcomes is based on unit record data made available through a Research Fellowship from the Australian Bureau of Statistics (ABS). Unfortunately, the 1 per cent 1986 public-use sample is of limited use because several census classifications were truncated to preserve the anonymity of individuals.

The intermarriage data analysed here were produced in response to a request for a special matrix tape interrelating the ethnic origins of spouses (grouped into 33 different ancestries), their place of birth (Australia versus overseas), their father's place of birth (Australia versus overseas), and country of marriage (Australia versus overseas) for seven marriage cohorts grouped according to intercensal periods. We requested intercensal cohorts to provide a potential link to earlier census data. Even though a question on ancestry has so far been asked in only one Australian census (1986), historical census data do exist for birthplace groups, for Aboriginal Australians, and (until 1976) for the Chinese. The intermarriage tape is restricted to couples (1) married for the first time and (2) enumerated together on census night. The second restriction is necessary because the characteristics of spouses can be linked only if they were co-resident on census night. The first restriction is needed because year of marriage is asked only in relation to the first, not the current, marriage. So country of marriage can be accurately established only for immigrants still in their first marriage at census time.

We also restricted the age range of couples by excluding spouses aged 60 or over. This constraint serves to limit any bias in marital dissolution due to class differentials in mortality. We have no comparable control for bias due to differential rates of breakdown among exogamous versus endogamous marriages. There is some American evidence that marriages across religious lines break down more often than marriages between members of the same faith, although this differential seems to be slight (Glenn, 1982: 555). Indeed, Glenn was inclined to doubt that religious out-marriage made any substantial contribution to the rising rate of American divorce. He further suggested that 'as inter-religious marriages become more frequent and socially accepted, any negative effects they have on marital quality are likely to diminish' (Glenn, 1982: 564).

A more recent study by Lehrer and Chiswick (1993: 395–7) also finds greater marital instability in religiously heterogamous marriages. They report increases in the predicted probability of marital dissolution by the fifth year of marriage ranging up to 28 percentage points, depending on the religious faiths involved. Because inter-ethnic marriages are often inter-faith marriages, there may be a greater tendency for marriages crossing ethnic boundaries to end in divorce or separation. If so, there will be some bias in trend analysis towards apparently greater in-marriage among older than younger cohorts, other things equal (Kalmijn, 1991*a*: 500; 1991*b*: 787). A recent Australian study (Jones, 1994) shows that marriages that cross ethnic boundaries are more likely to end in divorce. Our analysis of trends below makes allowance for any such bias.

The present analysis links data from all three data sources mentioned above. The primary data source is the intermarriage tape. Secondary sources were used to construct measures of group differences in educational, occupational, and income inequality, and measures of religious and linguistic diversity. These data come either from the labour force study (Jones, 1992*b*) or from special census tapes on ancestry (Social Science Data Archives, 1991: 459–66). The methods of analysis we use comprise standard log-linear approaches to the analysis of square tables (Hout, 1983). However, our implementation of the standard approach is novel in that we model out-marriage explicitly in terms of several independently derived measures of social differentiation and social distance.

Heterogeneity and group relations

More than half the formal theorems in the Blau–Schwartz theory of inter-group relations pertain to social mobility and therefore do not fall within the scope of our analysis. Several theorems, however, have direct implications for marriage patterns. Among the more important ones are the first, second, and eleventh. The first asserts that 'as group size increases, the probable rate of outgroup relations decreases' (Blau and Schwartz, 1984: 31). Applied to the social relation of marriage, this theorem implies a direct relationship between the size of a group and its rate of in-marriage. This implication can be readily tested with the data at hand. However, our analysis, unlike that of Blau and Schwartz, is not primarily concerned with marriage rates (constrained or unconstrained) but with the relative chances of marriage within and across ethnic boundaries. There is a large literature that discusses the limitations of constrained (mobility) rates as indices of social closure (Tyree, 1973; Hout, 1983; McCaa, 1989; Jones, 1991*b*; and the references therein).

According to their second theorem, 'heterogeneity promotes intergroup relations' (Blau and Schwartz, 1984: 41). A corollary is that heterogeneity promotes intermarriage (Blau *et al.*, 1982: 58). At the level of specific ethnic groups, this theorem implies that low degrees of internal homogeneity across any dimension of social differentiation are conducive to weaker tendencies towards in-marriage. We can summarize the main hypotheses that stratification, assimilation, and structural theory suggest about ethnic marriage patterns as follows.

Hypothesis 1. The rate of in-marriage in a minority group varies according to its socio-economic distance from the dominant ethnic group in a society. The greater the socio-economic distance, the greater is a group's degree of in-marriage.

Hypothesis 2. Minority groups exhibiting less social distance of any kind from the dominant group will tend to marry out more frequently.

Hypothesis 3. Social distance (or heterogeneity) within a minority group promotes out-group relations. The rate of out-marriage varies directly with the degree of in-group diversity.

Hypothesis 4. As relative group size increases, its rate of out-marriage decreases.

Descriptive analysis

Table 1 presents data on religious diversity in Australia among thirteen ancestry groups. Regional groups are a collapse from the more detailed list of ancestries available from the intermarriage tape (Social Science Data Archives, 1991: 464–5). The data on religious diversity come from unpublished background material from the labour-force study (Jones, 1992*b*). Our primary focus is on the seven more specific ancestries relating to countries bordering the Mediterranean sea. Because these are ancestry (not nativity) groups, they include native-born as well as foreign-born persons from the same ethnic stock. Even those born overseas sometimes come from different countries. For example, many persons of Spanish ancestry were born in Latin America; some Greeks come from Cyprus and Egypt; and some Portuguese were born, not in Portugal, but in former Portuguese colonies. Later analyses will deal with differences between immigrant generations and with other ancestries. The analyses reported here focus on fewer groups to facilitate the development of adequate analytical models and hypothesis testing.

According to the diversity indices in the final column of Table 1, the Mediterranean groups are relatively homogeneous with respect to nominal religious affiliation. Macedonians and Greeks, for example, mostly adhere to the Orthodox faith (92 and 86 per cent respectively). On the other hand, most Maltese, Italians, and Portuguese, are Roman Catholic (92, 89, and 87 per cent respectively). So these groups have low indices of religious diversity. The Spanish are somewhat more heterogeneous, with the most (63 per cent) being Catholic but with significant minorities of Anglicans (9 per cent) and persons reporting no religious affiliation (15 per cent). Compared with other Mediterranean ancestries, the Spanish group has more third-generation Australians of mixed ancestry, descended from immigrants recruited to work on the Queensland cane fields in the late nineteenth and early twentieth centuries. Although the Lebanese have a similarly long history of settlement, in 1986 this group consisted

Table 1. *Indices of linguistic dissimilarity[a] among seven regional groups and seven Mediterranean ancestry groups, 1986 Census of Australia*

Regional and ancestry groups	Indices of dissimilarity[a] between groups													Within-group diversity[b]
	2	3	4	5	6	a	b	c	d	e	f	g	7	
1. English-speaking background	21.8	63.2	73.3	73.7	73.1	94.6	84.4	56.3	70.1	60.0	81.2	81.8	15.1	0.030
2. North-western European		60.2	70.2	72.4	71.6	94.4	84.1	55.9	69.7	57.2	79.3	81.1	19.0	0.394
3. Eastern European			59.4	54.6	68.1	65.4	82.0	63.2	69.3	59.9	61.7	81.6	51.5	0.735
4. Western Asian				61.3	66.4	94.3	83.7	73.3	73.3	69.2	68.0	22.9	61.7	0.581
5. Eastern Asian					72.5	94.6	84.4	74.3	74.2	71.3	55.3	81.7	63.9	0.737
6. Mediterranean Basin						90.3	60.1	66.7	39.2	67.2	78.5	76.6	67.7	0.767
(a) Macedonian							91.6	94.7	94.8	94.5	94.5	94.7	93.4	0.124
(b) Greek								84.0	84.2	83.9	84.0	84.2	82.8	0.305
(c) Maltese									68.3	59.2	81.2	81.9	55.1	0.521
(d) Italian										68.1	80.6	81.9	68.6	0.435
(e) Spanish											77.1	81.0	53.9	0.547
(f) Portuguese												81.2	69.8	0.340
(g) Lebanese													80.8	0.314
7. Other backgrounds														0.295

[a]For the Index of Dissimilarity and a related measure, see Jones, 1992*a*.

[b]For the Diversity Index, see Lieberson, 1969.

Notes: Fourteen language groups are distinguished: Arabic or Lebanese, Chinese, Dutch, French, German, Greek, Italian, Maltese, Polish, Yugoslav, Spanish, Vietnamese, other foreign languages; and English.

'Not stated' are excluded from the dissimilarity analysis because of the high proportion with 'not stated' ancestry.

Figures pertain to persons under the age of 65 years.

mainly of recent immigrants, including many refugees. Just over half were Roman Catholics. A further two in five were adherents of the Islamic faith.

Tables 2 through 5 provide comparable information on linguistic, educational, occupational, and income diversity for the same ancestry groups. Not surprisingly, there is very little linguistic diversity among persons of English-speaking background (hereafter ESB; NESB stands for persons of non-English-speaking background). Almost all (98 per cent) spoke English at home. The most linguistically diverse groups are Eastern Asians and Eastern Europeans. The first group comprises significant minorities who speak Chinese (33 per cent), Vietnamese (15 per cent), and other unspecified foreign languages (26 per cent), as well as English (25 per cent). Among Eastern Europeans, Slavonic languages (29 per cent), Polish (13 per cent), and other languages (19 per cent) are commonly spoken at home. The low level of linguistic diversity among Macedonians comes about, not because they use English at home (only 5 per cent do so), but because almost all speak a Slavonic language. Most members of other Mediterranean ancestries also speak a language other than English at home: 81 per cent of Greeks speak Greek; 78 per cent of the Portuguese speak other languages (presumably Portuguese, a language not distinguished in the tapes we used, although it is distinguished in the full census classification); 68 per cent of the Italians speak Italian; 55 per cent of the Spanish speak Spanish; and more than half the Maltese (53 per cent) speak Maltese, even though English has been an official language in Malta for generations.

We do not propose to discuss these tables in detail. They serve to provide measures of internal group diversity and measures of internal group diversity and measures of social distance between groups (Indices of Dissimilarity, or ID). We use dissimilarity matrices later to give substance to

Table 2. *Indices of religious dissimilarity[a] among seven regional groups and seven Mediterranean ancestry groups, 1986 Census of Australia*

Regional and ancestry groups	Indices of dissimilarity[a] between groups													Within-group diversity[b]
	2	3	4	5	6	a	b	c	d	e	f	g	7	
1. English-speaking background	22.4	56.6	74.6	48.5	64.6	91.4	86.1	67.1	65.6	47.0	65.6	65.1	33.6	0.782
2. North-western European		45.1	73.9	40.0	56.2	91.2	85.8	59.0	57.3	38.1	57.2	56.7	22.3	0.826
3. Eastern European			67.1	42.5	14.4	76.5	71.1	32.6	31.0	22.7	31.3	24.6	25.6	0.632
4. Western Asian				66.8	72.5	86.3	81.1	80.8	79.6	74.3	79.7	50.0	67.0	0.801
5. Eastern Asian					49.4	90.9	85.8	53.2	51.9	37.2	51.9	45.8	31.5	0.795
6. Mediterranean Basin						66.3	60.9	28.9	27.2	26.0	28.0	24.6	37.0	0.553
(a) Macedonian							5.5	91.7	91.7	91.3	92.0	81.9	81.5	0.163
(b) Greek								87.8	86.7	85.9	87.3	77.6	76.0	0.259
(c) Maltese									2.0	22.0	2.8	36.6	50.6	0.181
(d) Italian										20.3	1.8	36.3	49.0	0.210
(e) Spanish											20.0	33.8	30.3	0.513
(f) Portuguese												35.4	48.9	0.216
(g) Lebanese													37.2	0.645
7. Other backgrounds														0.790

[a]See note [a] to Table 1.
[b]See note [b] to Table 1.
Notes: Over twenty religious affiliations can be distinguished from the census data: Anglican; Baptist; Brethren; Catholic; Congregational; Churches of Christ; Jehovah's Witness; Latter Day Saints; Lutheran; Oriental Christian; Orthodox; Pentecostal; Presbyterian; Salvation Army; Seventh Day Adventist; Uniting Church; Other Protestant; Other Christian; Buddhist; Hindu; Jewish; Muslim; other non-Christian; and non-theistic.
Persons stating 'No religion' are included in the dissimilarity analysis but 'Not stated' are excluded.
Figures pertain to persons in the labour force.

empirically derived distance scores and to test some of the hypotheses listed above. Table 4 requires comment because it is the only table that excludes women. We treat data on occupations as a proxy for class differences across groups. Because there is a strong pattern of occupational segregation between the sexes, we represent the relative class position of ethnic groups by the male distribution because men are usually (but not always) the principal earners in households even where both spouses work for pay. However, the broad pattern would not change much if women were included. All the Mediterranean groups have rather low average status, especially Macedonians. Along with East Asians, they have an occupational distribution least like that of ESB persons (Indices of Dissimilarity of around 39 per cent). But East Asians are more highly qualified and hold higher status jobs (Jones, 1992*b*). Only 2 per cent of Macedonians have a university degree, compared with 14 per cent of East Asians. Among ESB persons, the comparable figures is 7 per cent.

Hypothesis testing

According to Hypothesis 1, rates of in-marriage covary with socio-economic distance from the dominant group. Because socially distant groups have fewer opportunities for intermarriage, their degree of closure through in-marriage should be higher. Tables 3, 4, and 5 present three relevant measures of socio-economic differentiation, while Table 6 gives rates of in-marriage across groups for different cohorts. We test this hypothesis using the first row of the distance matrices (distance from the majority group, ESB persons). Also, because the distance coefficients relate to the census year of 1986, we restrict analysis to recent marriages and pool data

Table 3. *Indices of educational dissimilarity[a] among seven regional groups and seven Mediterranean ancestry groups, 1986 Census of Australia*

Regional and ancestry groups	Indices of dissimilarity[a] between groups													Mean years of schooling	Gini coefficient of educational inequality[b]
	2	3	4	5	6	a	b	c	d	e	f	g	7		
1. English-speaking background	14.3	26.1	42.6	52.4	26.3	33.3	39.2	16.4	23.4	22.4	41.5	30.0	20.2	10.66	0.105
2. North-western European		19.0	35.5	45.5	21.4	33.2	33.7	26.0	17.6	15.2	35.3	28.6	9.7	10.96	0.103
3. Eastern European			18.2	27.2	20.6	27.5	20.2	33.2	21.0	8.7	29.4	17.9	12.3	11.22	0.114
4. Western Asian				16.9	27.0	30.5	23.0	43.4	29.4	24.0	29.1	23.8	26.3	11.64	0.149
5. Eastern Asian					41.6	41.6	35.7	54.2	44.0	34.1	43.6	34.8	36.3	12.20	0.120
6. Mediterranean Basin						14.8	13.8	23.0	3.8	13.9	16.2	13.4	15.8	10.10	0.137
(a) Macedonian							16.6	26.2	17.7	23.6	20.5	14.3	26.7	9.86	0.136
(b) Greek								35.6	17.3	20.2	11.8	15.6	24.7	10.03	0.157
(c) Maltese									22.0	26.1	34.2	26.9	25.9	9.86	0.099
(d) Italian										14.4	19.3	15.3	14.4	10.10	0.134
(e) Spanish											24.6	17.6	9.2	10.76	0.114
(f) Portuguese												25.5	27.4	9.38	0.157
(g) Lebanese													22.8	10.47	0.122
7. Other backgrounds														10.85	0.121

[a]See note to Table 1.

[b]The Gini coefficient is a standard measure of distributional inequality (Blau and Schwartz, 1984: 62–7). Age left school and qualifications were converted to years of education in order to calculate the Gini coefficient.

Notes: Twelve educational categories were distinguished, as follows.

For persons with no post-school qualifications: left school at twelve years of age or younger, at 13, at 14, at 15, at 16, at 17, at 18, at 19, or older. For persons with a post-school qualification: possession of a degree, a diploma, a trade, or similar certificate, and other qualifications.

Figures pertain to persons in the labour force.

for persons married in Australia for the first time in 1972 or later (the last three cohorts in Table 6).

We computed correlations between the percentages in-married in each of the twelve NESB ancestry groups (excluding the Mediterranean Basin region, which is simply the weighted average for seven specific ancestries) and the indices for educational, occupational, and income distance from ESB persons. All six correlations (three for wives; three for husbands) were in the predicted direction (positive) and were moderately strong, ranging from 0.54 (income ID and husbands' in-marriage rate) to 0.69 (occupational ID and husbands' in-marriage rate). So the data support the first hypothesis. The degree of ethnic stratification indicated by the distance indices is related to the extent of social closure indicated by in-marriage rates.[2]

We test the more general second hypothesis with data on linguistic and religious differentiation, shown in Tables 1 and 2 above. All correlations are significant and in the expected (positive) direction: 0.59 and 0.54 for language (for wives' and husbands' in-marriage rates) and 0.71 and 0.59 for religion.

These simple descriptive analyses all lend general support to stratification and assimilation theory, and to Blau and Schwartz's (1984: 14) basic postulate that 'people tend to associate with others located close to them in social space'. After all, marriage is the closest voluntary association that most people form over their lifetimes. Social distance between groups discourages associations. Is the converse true as well? Does internal group heterogeneity encourage outmarriage, as claimed by Hypothesis 3?

Table 4. *Indices of occupational dissimilarity,[a] average socio-economic status and Gini coefficients of status inequality among employed men from seven regional groups and seven Mediterranean ancestry groups, 1986 Census of Australia*

Regional and ancestry groups	Indices of dissimilarity[a] between groups													Mean status	Gini coefficient of status inequality[b]
	2	3	4	5	6	a	b	c	d	e	f	g	7		
1. English-speaking background	8.8	18.8	30.2	39.5	21.0	39.1	27.4	25.8	20.4	22.0	37.1	33.4	11.0	31.8	0.362
2. North-western European		17.6	30.8	39.4	21.5	42.0	28.1	27.8	19.3	22.0	38.2	34.2	10.7	33.3	0.339
3. Eastern European			25.5	33.4	16.3	32.7	21.6	21.4	18.3	13.1	27.0	29.0	11.8	29.6	0.380
4. Western Asian				25.1	25.1	39.1	21.0	33.9	29.2	30.5	36.8	21.3	24.0	33.5	0.397
5. Eastern Asian					37.0	43.9	33.8	40.8	40.5	36.9	41.7	36.0	33.8	33.0	0.406
6. Mediterranean Basin						30.6	12.6	18.7	7.6	16.9	25.5	20.2	12.5	26.8	0.371
(a) Macedonian							32.9	26.0	35.0	31.5	29.4	37.2	35.2	18.7	0.419
(b) Greek								25.5	19.2	22.1	29.2	15.1	19.4	26.7	0.379
(c) Maltese									22.5	19.3	28.8	32.1	22.4	23.7	0.338
(d) Italian										19.6	29.2	26.1	13.1	28.1	0.356
(e) Spanish											23.3	29.2	15.4	26.6	0.368
(f) Portuguese												33.7	30.8	22.1	0.382
(g) Lebanese													26.0	27.3	0.373
7. Other backgrounds														30.5	0.368

[a]See note [a] to Table 1.
[b]See note [b] to Table 3.
Notes: The occupational dissimilarity analysis is based on 334 occupational groups available in the Australian Standard Classification of Occupations (ASCO). Analysis is restricted to employed men only because of occupational segregation.

We tested this hypothesis using data from the last column of Tables 1 and 2 on linguistic and religious diversity, and in-marriage rates for persons marrying in 1972 or later. The hypothesis receives weak support from the data. The correlations between linguistic diversity and in-marriage are moderately strong and in the predicted direction (minus 0.55 for wives and minus 0.47 for husbands). Those for religious diversity are weaker, although still in the predicted direction (the correlation for wives is minus 0.12 and for husbands is minus 0.08). With only twelve observations, just one of these four correlations is reliably different from zero.

Despite a positive link between linguistic and religious diversity (a correlation of 0.42), some groups with little linguistic diversity display considerable religious diversity. The north-western European group is a case in point because it combines moderate linguistic diversity with high religious diversity. It also has low rates of in-marriage. In contrast, Italians display a similar degree of linguistic diversity but are religiously much more homogeneous. Their in-marriage rates are two to three times higher. In short, linguistic and religious differences do not always run parallel. Language diversity supports Hypothesis 3 more strongly than religious diversity, because foreign language maintenance at home effectively measures the recency of the ancestry group. Hypothesis 3 seems to draw its force from its contingent rather than its necessary relationship with other factors, such as the distance between the minority and the majority group (Hypotheses 1 and 2).

Is the rate of in-marriage directly related to minority group size (Hypothesis 4)? The data in Table 6 bear on this issue. Generally speaking, the in-marriage rate is higher for women than for men, but there is only a weak tendency for it to vary with min-

Table 5. *Indices of income dissimilarity,[a] average annual income, and Gini coefficients of income inequality among employed persons from seven regional groups and seven Mediterranean ancestry groups, 1986 Census of Australia*

Regional and ancestry groups	Indices of dissimilarity[a] between groups													Mean income	Gini coefficient of income inequality[b]
	2	3	4	5	6	a	b	c	d	e	f	g	7		
1. English-speaking background	3.3	7.2	7.9	8.5	11.6	28.7	14.1	13.2	11.2	8.8	16.3	15.1	4.8	$17 280	0.335
2. North-western European		6.3	10.2	10.3	12.9	29.3	15.5	12.8	11.7	8.8	16.0	18.1	5.4	$17 670	0.321
3. Eastern European			9.2	7.3	8.3	23.0	11.7	7.9	6.9	4.8	10.0	16.7	3.9	$17,390	0.298
4. Western Asian				6.0	7.9	22.6	9.5	11.6	9.7	8.6	12.6	10.4	7.0	$17 370	0.347
5. Eastern Asian					8.3	21.8	9.2	11.3	8.8	7.5	11.4	12.1	5.7	$16 770	0.322
6. Mediterranean Basin						16.6	4.2	4.1	2.4	5.5	4.6	9.7	7.8	$15 708	0.286
(a) Macedonian							15.2	19.0	18.3	21.3	14.7	17.5	24.2	$14 280	0.230
(b) Greek								8.2	6.5	8.9	6.6	6.8	10.2	$15 280	0.290
(c) Maltese									2.7	5.3	4.3	13.3	8.9	$15 820	0.269
(d) Italian										4.2	5.1	11.6	6.9	$16 070	0.286
(e) Spanish											8.0	13.2	4.5	$16 050	0.292
(f) Portuguese												13.3	11.5	$15 790	0.258
(g) Lebanese													13.9	$14 460	0.316
7. Other backgrounds														$16 910	0.316

[a]See note to Table 1.
[b]See note [b] to Table 3.
Notes: The mid-points of the thirteen income groups used in analysis are: $750, $3000, $5000, $7500, $10 500, $13 500, $16 500, $20 000, $24 000, $29 000, $36 000, $45 000, and $70 000.
Figures pertain to persons in the labour force with some income.

ority group size. The product-moment correlations between group size and in-marriage rates across groups and time is 0.18 for husbands and 0.12 for wives. Although based on 84 observations, neither coefficient is reliably different from zero. This weak size effect implies that significant group differences in preference of in-marriage do exist. Otherwise, out-marriage rates would mirror group size, which does vary from one group to another, rather than preferences, which Hypothesis 4 assumes are effectively constant across groups. The fact that the correlations reported above are weak implies (1) that different groups have different cultural preferences for in-marriage, and/or (2) that these preferences vary over time. Descriptive measures like the rates reported in Table 6 above conflate both effects: rates reflect opportunities as well as preferences (Gray, 1987: 368–9). Table 7 takes the analysis of ethnic in-marriage a critical step further by identifying group preferences for ethnic in-marriage. To carry out this task we use log-linear models.

Table 7 reports the fit of a series of log-linear models for each marriage cohort. Each model predicts the marriage counts in a series of square tables (one for each cohort) cross-classifying the ancestries of husbands and wives. We excluded the residual category shown in earlier tables because it consists of smaller ancestry groups, including 'not stated'. This mix of specific and non-specific 'missing' data does not add much to our understanding of marriage patterns. So we exclude the residual category and focus on seven twelve-by-twelve tables. Model 1 is simply a baseline model representing the opportunity structure, or the relative supply of persons from each ancestry whose surviving marriages were recorded on census night. It yields a set of counts where marriage choices reflect only the

Table 6. *Percentage (number) of husbands and wives in-marrying among seven regional groups and seven Mediterranean ancestry groups in Australia, 1947 to 1986*

Ancestry group	Percentage in-married by marriage cohort													
	1947–54		1955–61		1962–6		1967–71		1972–6		1977–81		1981–6	
	Hus.	Wife	Hus.	Wife	Hus.	Wife	Hus.	Wife	Hus.	Wife	Hus.	Wife	Hus.	Wife
1. English-speaking background	96	95	95	92	93	90	90	88	88	87	86	85	83	83
	(96 103)		(177 745)		(161 644)		(216 515)		(204 861)		(178 176)		(174 424)	
2. North-western European	38	43	41	47	31	37	25	28	23	24	22	23	21	21
	(1939)		(6110)		(4909)		(5125)		(4744)		(4399)		(4686)	
3. Eastern European	47	61	55	65	52	59	51	53	45	49	39	44	37	40
	(604)		(2578)		(3288)		(5430)		(5144)		(3588)		(3230)	
4. Western Asian	78	80	79	81	79	76	77	81	81	85	79	86	76	82
	(177)		(428)		(372)		(730)		(1184)		(1377)		(1327)	
5. Eastern Asian	41	42	50	50	47	50	58	55	67	56	74	57	78	58
	(97)		(381)		(587)		(1440)		(2845)		(4915)		(6899)	
6. Mediterranean Basin	74	83	82	91	81	89	73	83	67	75	62	67	58	61
	(3321)		(2967)		(25 409)		(24 984)		(22 258)		(18 475)		(18 228)	
(a) Macedonian	93	97	91	94	86	90	91	94	92	93	86	90	76	80
	(66)		(334)		(324)		(975)		(1325)		(824)		(565)	
(b) Greek	70	78	90	94	92	94	85	89	76	82	68	73	63	67
	(460)		(7000)		(10 542)		(8788)		(5903)		(4417)		(4468)	
(c) Maltese	73	78	68	79	68	73	59	64	53	58	45	49	36	38
	(399)		(1701)		(1961)		(2237)		(2076)		(1507)		(1128)	
(d) Italian	73	83	79	91	74	88	65	79	57	68	52	57	48	51
	(2192)		(12 990)		(11 266)		(10 387)		(8800)		(7644)		(7755)	
(e) Spanish	12	12	28	29	42	38	38	39	42	40	29	28	26	23
	(12)		(104)		(243)		(348)		(571)		(384)		(368)	
(f) Portuguese	46	75	56	70	66	83	79	81	75	82	65	72	56	62
	(6)		(31)		(86)		(298)		(454)		(322)		(289)	
(g) Lebanese	52	60	71	76	73	81	78	87	83	88	80	84	73	78
	(49)		(415)		(492)		(1255)		(2172)		(2114)		(1696)	
7. Other ancestries	86	86	83	84	82	80	80	76	76	72	72	69	66	66
	(5358)		(10 695)		(11 187)		(15 589)		(15 922)		(13 761)		(13 431)	

[a]Analysis is restricted to couples married for the first time. Persons born overseas are included only if they married after arrival in Australia.

relative supply of spouses from each ancestry and not preferences for ethnic in-marriage. It assumes no special taste for co-ethnic partners. This model, as expected, provides an extremely poor representation of the data. Its likelihood ratio χ^2 is very large; it misclassifies the ancestry of more than one in five spouses; and its Bayesian Information Coefficient (BIC) is large and positive, indicating that it gives a poor representation of the data relative to the saturated model (Raftery, 1986).

The second model adds a set of twelve parameters representing variable group preferences towards ethnic in-marriage. Each group is allowed to have its own preference level, although this level is set constant over time. This simple modification of the conditional independence (or equal opportunity) model achieves a dramatic improvement in fit that accounts for 97 per cent of the association defined by the baseline, Model 1. Even so, it is not an acceptable model of the data. Its likelihood ratio χ^2 is 45

Table 7. *Measures of fit for different log-linear models of ethnic marriage patterns in Australia, 1947–86*

Model fitted	LRχ^2	Degrees of freedom	BIC	Index of dissimilarity
1. Conditional independence across groups and cohorts	1240955.5	847	1228796	20.37
2. Model 1, plus variable in-marriage across groups (constant by cohort)	37760.8	835	25773	3.44
3. Model 2, plus linear trend in in-marriage across cohorts	14497.7	834	2525	1.43
4. Model 2, plus variable in-marriage across both groups and cohorts	9638.4	763	−1315	0.69
5. Model 4, plus matrix for linguistic dissimilarity	5430.4	762	−5509	0.44
6. Model 5, plus matrix for religious dissimilarity	4482.8	761	−6442	0.42
7. Model 6, plus matrix for educational dissimilarity	4020.5	760	−6890	0.37
8. Model 7, plus matrix for occupational dissimilarity	3916.2	759	−6980	0.36
9. Model 8, plus matrix for income dissimilarity	3406.9	758	−7475	0.32
10. Model 4, plus distance scores (ϕ) set equal for wives and husbands and constant across cohorts	3149.0	752	−7647	0.31
11. Model 10, plus simple linear trend in off-diagonal association (ϕ)	3129.4	751	−7652	0.31
12. Model 11, plus curvilinear trend in off-diagonal association (ϕ)	3101.4	750	−7666	0.30
13. Model 10, plus unconstrained variation in off-diagonal association (ϕ) across cohorts	3059.1	746	−7650	0.30

times as large as its degrees of freedom; it still misclassifies 3.4 per cent of spouses; and its BIC is positive rather than negative.

The remaining statistical models shown in Table 8 test different theoretical possibilities relating to the pattern of ethnic in-marriage and out-marriage, and how that pattern may have changed over time. Model 3 uses one degree of freedom to fit a simple linear trend of declining in-marriage. It accounts for a further 2 per cent of the baseline likelihood ratio χ^2. This model provides initial support for an across-the-board decline in group in-marriage since the end of the Second World War, a decline consistent with growing ethnic diversity. However, while this model is an improvement over Model 2, it still does not provide an adequate account of the marriage data. Model 4 provides greater flexibility than Model 3, by relaxing the constraints on change over time and allowing each group to have its own preference for in-marriage at each time period. It

uses a further 72 degrees of freedom and fits all diagonal counts (in-marriages) exactly. Model 4 is formally equivalent to quasi-independence (the model of conditional independence with the diagonal blanked out). Note that this is the first Model that returns a negative BIC, showing that it gives a more parsimonious representation of the intermarriage data than the saturated model. Its likelihood ratio χ^2 is only thirteen times as large as its degrees of freedom, and it mis-classifies fewer than 1 per cent of spouses. However, all the errors of prediction under this model pertain to heterogamous marriages. Subsequent models focus on this latter class of marriages.

Models 5 through 9 fit the dissimilarity matrices from Tables 1 through 5 above. They test the general hypothesis that, when persons marry out of their ethnic group, they tend to marry into groups with similar rather than dissimilar group characteristics. The order in which these matrices are fitted follows a simple social learning model. People learn a language before they adopt a religion; they adopt a religion from their family of origin before they finish their schooling; their schooling precedes work; and income is mostly derived from work. This ordering is, however, less important than the general pattern of effects, which serve further to improve the fit of the model. Model 9, which includes all five dissimilarity matrices, accounts for 99.7 per cent of the association identified by the baseline Model 1; its likelihood ratio χ^2 is less than five times its degrees of freedom; and it misclassifies the ancestry of only three in every thousand spouses.

One difficulty in interpreting results from Models 5 through 9 is that the matrices of distance coefficients pertain only to the most recent period. Lacking comparable data for earlier censuses, we are unable to derive similar matrices for older cohorts. So we cannot use these matrices to model change over time effectively. We therefore adopted an alternative approach and fitted log-multiplicative (or log-bilinear) models that estimate an optimal set of between-group distances describing ethnic outmarriage. Although we fitted a variety of such mod-

Table 8. *Distance scores and parameter estimates from preferred model (Model 12) of marriage patterns across groups and cohorts in Australia, 1947–86*

Ancestry group	Scores and parameter estimates (standard errors)
Normalized distance scores	
1. English-speaking background	−0.387
2. North-western European	−0.476
3. Eastern European	−0.100
4. Western Asian	0.094
5. Eastern Asian	−0.360
6. Mediterranean basin	
(a) Macedonian	0.607
(b) Greek	0.218
(c) Maltese	0.082
(d) Italian	0.100
(e) Spanish	−0.018
(f) Portuguese	0.202
(g) Lebanese	0.088
Association effect for out-marriage (ϕ)	
Main effect	6.080 (0.269)
Linear time trend	−0.166 (0.027)
Curvilinear time trend	0.00332 (0.00062)

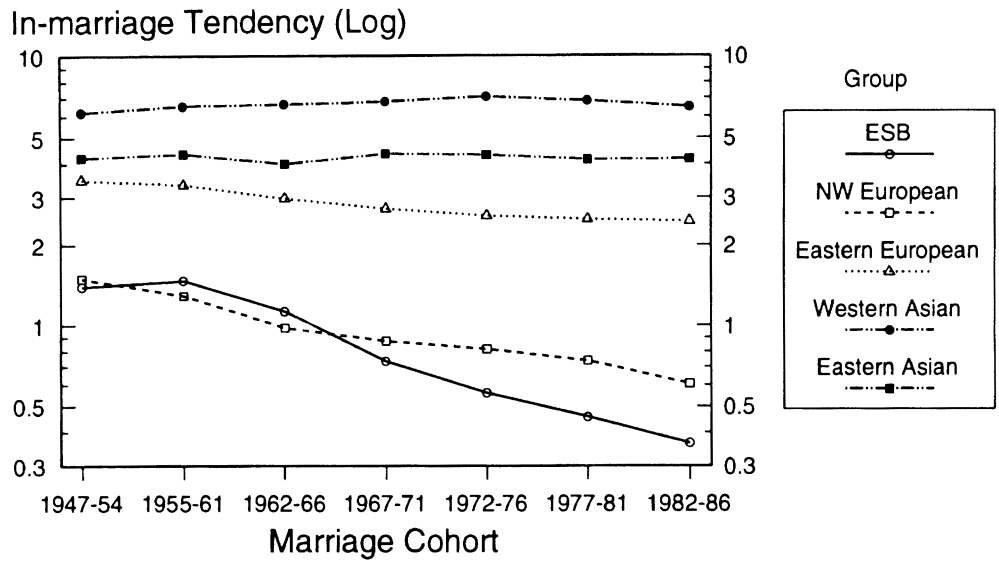
(continued)

els, we report results only for models that assign the same distance scores for both husbands and wives. It is instructive to compare measures of fit for Model 10 with those for Model 9. Both start from quasi-independence (Model 4) but Model 10 uses more degrees of freedom to model off-diagonal association. The two models are virtually indistinguishable in terms of fit. In fact, if we compare the fitted values for off-diagonal elements under each model,[3] we find that the R-squared exceeds +0.999. In short, there is no substantive advantage implied by choosing to model out-marriage in terms of inductively derived distance scores rather than in terms of group differences in language, religion, and socio-economic status. The practical scope for disagreement between such models is trivial, affecting fewer than one in every 10 000 spouses.

Before presenting details of our preferred model of these data, we should comment briefly on Models 11 through 13. All improve somewhat the fit between model and data. Model 11 is like Model 3 in that it fits a simple linear trend to one of the parameters, in this case the association coefficient for off-diagonal counts. It achieves a modest improvement in fit. However, as Model 12 shows, there is some curvilinearity in the trend, with off-diagonal association declining consistently until the early 1970s and rising somewhat thereafter. Model 13 includes the full pattern of cohort variation in off-diagonal association. In terms of its likelihood ratio χ^2, it has a superior fit

Table 8. (*continued*)

Ancestry group and cohort	Scores and Parameter Estimates (Standard Errors)						
	1947–54	**1955–61**	**1962–6**	**1967–71**	**1972–6**	**1977–81**	**1981–6**
Diagonal Effects for In-marriage							
1. English-speaking background	1.687	1.758	1.418	1.029	0.860	0.760	0.668
	(0.054)	(0.026)	(0.023)	(0.018)	(0.017)	(0.016)	(0.015)
2. North-western European	1.546	1.350	1.035	0.927	0.864	0.784	0.654
	(0.059)	(0.030)	(0.028)	(0.024)	(0.023)	(0.023)	(0.021)
3. Eastern European	3.827	3.688	3.322	3.073	2.898	2.817	2.773
	(0.087)	(0.044)	(0.036)	(0.027)	(0.026)	(0.028)	(0.028)
4. Western Asian	6.794	7.140	7.237	7.387	7.662	7.425	7.086
	(0.228)	(0.153)	(0.151)	(0.113)	(0.102)	(0.093)	(0.085)
5. Eastern Asian	4.961	5.090	4.748	5.099	5.038	4.868	4.895
	(0.163)	(0.091)	(0.072)	(0.052)	(0.041)	(0.035)	(0.032)
6. Mediterranean basin							
a. Macedonian	7.417	6.779	6.191	6.831	6.842	6.144	5.118
	(0.862)	(0.332)	(0.245)	(0.184)	(0.159)	(0.150)	(0.134)
b. Greek	4.386	5.718	5.862	5.441	4.855	4.179	3.714
	(0.146)	(0.071)	(0.058)	(0.049)	(0.045)	(0.041)	(0.039)
c. Maltese	5.371	4.777	4.620	4.286	4.063	3.692	3.229
	(0.145)	(0.068)	(0.058)	(0.046)	(0.044)	(0.045)	(0.046)
d. Italian	3.733	4.089	3.955	3.627	3.033	2.500	2.093
	(0.087)	(0.044)	(0.037)	(0.031)	(0.028)	(0.025)	(0.025)
e. Spanish	3.015	4.005	4.494	4.654	4.541	3.834	3.484
	(0.328)	(0.133)	(0.100)	(0.083)	(0.067)	(0.070)	(0.068)
f. Portuguese	7.567	7.452	7.846	7.862	7.455	6.844	6.133
	(0.877)	(0.402)	(0.308)	(0.182)	(0.144)	(0.138)	(0.122)
g. Lebanese	5.743	6.216	6.718	7.311	7.509	6.977	6.466
	(0.280)	(0.131)	(0.130)	(0.101)	(0.087)	(0.077)	(0.072)

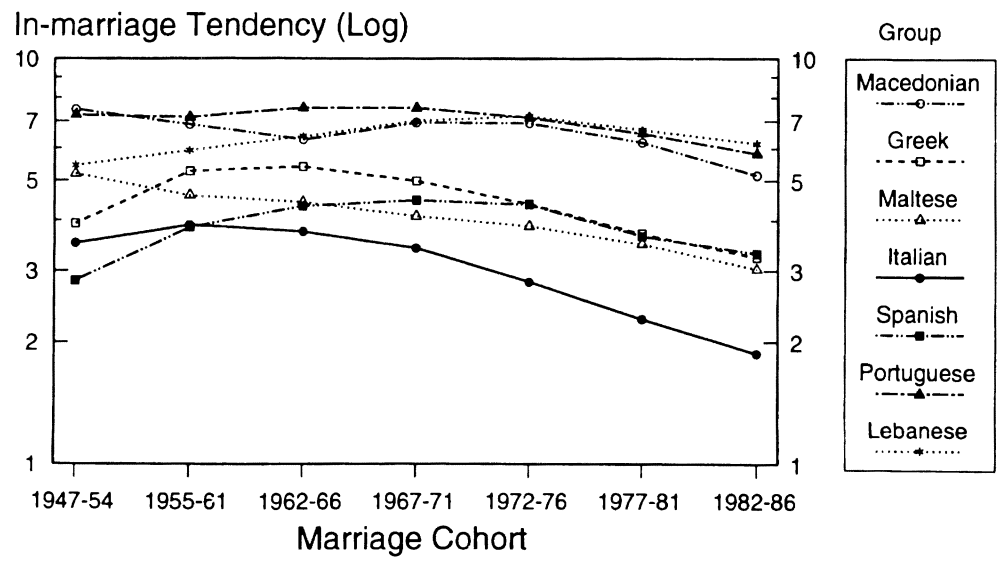


Note: Estimates are from Model 12 in Table 7.

Figure 1. *Changes over time in ethnic endogamy among six regional ancestry groups, 1947–86*

to previous models, although its BIC is inferior because it uses more degrees of freedom.

For interpretative purposes, we could have chosen any one of several well-fitting models. We focus on Model 12, estimates for which are in Table 8 and Figures 1 and 2. Recall that the distance scores are set constant over the whole period and are the same for wives and husbands. They summarize the central tendency in patterns of out-marriage, ranking north-western Europeans and persons of English-speaking background at one extreme of a continuum and Macedonians and Greeks at the



Note: Estimates are from Model 12 in Table 7.

Figure 2. *Changes over time in ethnic endogamy among six Mediterranean ancestry groups, 1947–86*

other. This dimension basically contrasts Orthodox groups (mainly foreign-born) with groups having more diverse religious compositions (mainly Australian-born). The apparently anomalous location of the Eastern Asian group close to persons of English-speaking background reflects the fact that in the early post-war period there was little new migration from Eastern Asia. So most members of this ancestry group were Australian-born and adherents of mainstream Christian churches. Note that the major Catholic groups are found around the middle of the continuum. In other words, in terms of out-marriage patterns the distance between Protestant and Orthodox groups is greater than that between Roman Catholic and Protestant groups. On the other hand, the Roman Catholic and Orthodox groups are somewhat closer. The Macedonian group is something of an outlier in terms of out-marriage patterns.[4]

It is difficult to compare these distance scores with those from other Australian studies because of different methodologies. For example, McAllister and Moore (1991, Table 3) report results from a Bogardus-style study of social distance but their groups differ from those in the present analysis. Even so, a comparison with their results suggests some slippage between social perception and actual marriage behaviour. For example, Asian people were generally perceived as more distant from the native-born than European groups, as were the Lebanese (they fall near the middle of our scale). Italians and Greeks were also seen as marginally closer than Germans, a ranking not borne out in our analysis.[5]

To estimate trend effects for out-marriage, we set time equal to the period elapsed from mid-1950 (the mid-point for the oldest marriage cohort). So 'time' ranges in value from zero to 33.5 (the number of years from mid-1950 to 1984). The association effect at the beginning of the period is simply the main effect (6.080) because both linear and curvilinear time effects are zero. What the model says is that there is a strong but declining effect of heterogamy captured by the distance scores: the greater the distance between groups, the lower the likelihood of intermarriage between them. Between mid-1950 and 1960, this effect declined by −1.277 points or 26 per cent.[6] We can illustrate the impact of this effect by considering the expected number of marriages between the members of two different ancestry groups. Take as an example intermarriages between persons of English-speaking background and persons of Greek ancestry. Whatever the precise number of such intermarriages predicted by the model, the association effect implies that for the oldest marriage cohort the log of this expected number must be reduced by the cross-product of the distance scores and the association coefficients, or by minus 0.513. By 1960 this same set of effects amounted to minus 0.405, reflecting an increase in heterogamous marriages. In other words, if 100 such intermarriages were expected to occur between 1947 and 1954, by 1960 this number would have risen to 111, other things equal.[7]

This association effect weakened until the mid-1970s, after which it rose slightly. We cannot suggest an entirely convincing reason for this reversal in trend. We did, however, explore several possibilities. First, we tested a speculation that intermarriage with Asian immigrants may have increased following the end of the Vietnam War and growing immigration from South-east Asia. To test this possibility, we excluded Eastern Asians from the analysis. However, the curvilinear effect persisted. We next sought to isolate the effect by eliminating other groups from the analysis. It turns out that the effect is located squarely in the changing behaviour of the majority group: persons of English-speaking background. When we exclude them, we find a simple linear trend towards weaker association over time, with no evidence of curvilinearity in trend. In other words, the slight reversal in the strength of off-diagonal association arises from the changing marriage behaviour of the ESB group. They were more open in their marriage choices between 1972 and 1976 than either before or after. This change in behaviour coincided with many other social changes, including the vigorous promotion of multiculturalism in Australia by the Whitlam government. We find it hard to believe that changing ideologies were mirrored so rapidly, and temporarily, in the marriage market of the day, but we cannot find a more plausible explanation. However, we should not exaggerate this reversal in trend. According to the models reported in Table 7, out-marriage can be modelled almost as well by a linear as a curvilinear trend. While including a curvilinear effect does improve model fit, it reallocates only two in every thousand out-marriages compared to a simple linear trend model.

In any event, ethnic out-marriage is less common than ethnic in-marriage. According to the estimates in Table 8, every group shows a distinct tendency towards in-marriage, even groups like persons of English-speaking background and North-western Europeans, both of which have low underlying tendencies towards in-marriage. We have already pointed out that marriage rates (see Table 6 above) confound opportunities for in-marriage with preferences. The log-linear estimates (see Table 8) separate preferences into a distinct component.

Trends in preferences can perhaps be more easily discerned from the graphs in Figures 1 and 2. Figure 1 details findings for broad regional groups and Figure 2 pertains to Mediterranean ancestries. Three of the five regional groups show a long-term decline in preferences for in-marriage: Eastern Europeans, North-western Europeans, and persons of English-speaking background. In the latter two cases, preferences for in-marriage were quite weak in the 1980s compared to the 1950s. The two Asian groups, on the other hand, show no decline in preferences for ethnic in-marriage. The relative odds of marrying into their own group rather than out of it remained constant over the period concerned. The Western Asian group showed an even greater tendency towards social closure than Eastern Asians, reflecting the strength of pressures towards in-marriage among persons of Jewish background on the one hand and those of Turkish background on the other (Jewish persons made up most of this category until the 1970s).

These strong tendencies towards ethnic in-marriage were matched by the Lebanese and the Macedonians (see Figure 2 and Table 8). So a tendency to closure seems to characterize the Western Asian region as a whole. It clearly has a strong religious basis. While Greeks share a common religion with the Macedonians (Orthodoxy), their tendency towards ethnic in-marriage is not only lower but declines more sharply over time as well. The Spanish, Maltese, and Italian groups, all predominantly Roman Catholic, display weaker tendencies towards in-marriage, tendencies that also decline over time.[8]

We find that group closure through ethnic in-marriage compared with other social mechanisms is very strong. Group closure through ethnic in-marriage is, for example, stronger than élite class in-marriage. Jones and Davis (1986: 101) reported an endogamy parameter of only 0.660 in the log scale for élite class origins (husbands and wives with fathers in the higher service class). Few of the parameters reported in Table 9 fall below this figure and many exceed it by a factor of five to ten times. On the other hand, they report stronger effects for élite status homogamy; for example, a homogamy coefficient of 2.022 for members of the upper professional stratum. This estimate is much the same as that for ethnic in-marriage among Italians in recent years. However, it is weaker than many other effects in Table 8.

The ancestry effects in Table 8 are not as strong as effects based on birthplace alone. Jones (1991*b*: 38) reports multiplicative parameter estimates from marriage registration data for several southern European birthplaces that reveal stronger tendencies towards in-marriage among first-generation immigrants. Converting his estimates to the log form, we find that in the early 1980s the in-marriage coefficient for Greek-born spouses was 5.3 compared with our figure of 3.2 for persons of Greek ancestry. Similarly, for the Lebanese-born the figures were 7.1 and 6.2, while the corresponding figures for Italian-born persons versus persons of Italian ancestry were 3.4 and 1.9 respectively. These differences imply an obvious conclusion; namely, that the Australian-born descendants of immigrants encountered a wider range of marriage choices than did first-generation immigrants.

To what extent are analyses based on marriages surviving to census time likely to be biased by differential divorce rates across ethnic groups and type of marriage (heterogamous rather than homogamous)? There is little Australian or overseas evidence bearing on this issue. However, American (Schwertfeger, 1982) and Australian (Jones, 1994) research shows that different ethnic groups do have different propensities for divorce. The Australian study further demonstrates that marriages that cross ethnic boundaries are more likely to end in divorce than ethnically homogeneous marriages. The Australian divorce pattern basically conforms to a simple model of normative convergence in which group preferences for divorce jointly determine the likelihood of divorce among both homogeneous and heterogeneous

couples. However, the risk of divorce is uniformly higher for ethnically mixed couples than a model of simple convergence implies.

It is a complicated matter to apply such findings to the present analysis, for two reasons. First, the Australian study mentioned above pertains to birthplace, not ancestry, groups. Second, it covers only a short period in the 1970s when the relevant registration data were available. So no trend data exist. Despite these difficulties, we have attempted to adjust our data for differential divorce in order to assess the sensitivity of our results to marital attrition.[9]

Our adjustment procedure inflates the number of marriages in the analysis by almost one quarter of a million (to be exact, by 239 281 marriages, or 13.9 per cent). The adjustment was greatest for the oldest cohort (a 31.9 per cent increase) and least for the youngest (only 3.5 per cent). Other cohorts fall between these two extremes, according to the amount of time elapsed since first marriage. As for ancestry differentials, the increase was greatest among groups with high propensities for divorce (persons of English-speaking background and North-western Europeans, with increases of 15 and 16 per cent respectively), and lowest for the Lebanese and Portuguese (4 per cent). In most groups, the inflation factor was greater for mixed marriages than for ethnically homogeneous ones. For example, among persons of Lebanese ancestry, the inflation factor was only 2.7 per cent for homogamous marriages but 7.8 per cent for heterogamous ones.

Such differentials in rates of marriage breakdown do not materially affect the interpretation of trends. We re-estimated Model 12 using adjusted counts. Except for Eastern Asians, the normalized distance scores varied only at the third decimal place, by up to five points. However, the score for Eastern Asians was only half that for the observed data, that is to say, closer to zero. Even so, the rank order of groups was preserved, and this single difference does not affect substantive interpretation. The adjusted main effect for the association coefficient was 6.229 compared with the observed value in Table 9 of 6.080; the linear trend effect was −0.167 rather than −0.166; and the curvilinear effect was 0.00318 rather than 0.00332. None of these differences materially affects the interpretation of association, or trends over time. Similarly, differences in diagonal effects were small. For persons of English-speaking background, the adjusted endogamy effect declined from 1.599 to 0.660, compared with a decline from 1.687 to 0.668 in the observed data. For persons of Italian ancestry, the comparable figures are 3.732 and 2.093 versus 3.724 and 2.087. When we arrayed all 84 endogamy parameter estimates across cohorts and groups for both adjusted and observed counts, we found near-perfect correlation between them (an R-squared of 0.9997). In other words, the results we report are not sensitive to differential attrition arising from the twin facts that (1) divorce rates differ by ethnicity, and (2) heterogamous marriages are more likely to end in divorce than are homogamous ones.

Conclusion

These Australian data on intermarriage behaviour support the main hypotheses from ethnic stratification theory, assimilation theory, and the Blau–Schwartz theory of intergroup relations. Specifically, we show that the socio-economic distance between ethnic groups is related to social closure through ethnic in-marriage, as are other forms of social distance. On the other hand, within-group heterogeneity seems to encourage out-marriage mainly through its contingent rather than necessary relationship with social distance from the dominant ancestry group. Group-size effects on out-marriage are weak relative to differences in group preferences for in-marriage.

We use log-bilinear models to separate such size effects from preferences for in-marriage. Trend analysis highlights two separate tendencies. Ethnic endogamy remains the rule for all ethnic groups, but many groups experienced a significant decline in the preference for endogamy during the post-war period. Declines are less apparent in groups where the stock of new immigrants has been replenished over time. Generally speaking, declines in endogamy occur after the peak of new immigration has passed. Thus, the decline occurred earlier among North-western Europeans than it did among Italians and Greeks, because the flow of new immigration decreased a decade earlier in North-western

Europe than elsewhere in Europe. Among Eastern Asian and Western Asian groups, on the other hand, there has been no significant decline in endogamy over time, despite the fact that in the early post-war period there was negligible immigration from this region of the world. Among these groups, distinctive religious affiliations serve to maintain high degrees of group closure. For most groups, however, our analyses imply that, in the absence of continuing immigration flows, ethnic preferences for in-marriage will, with the further passage of time, weaken to the point where they provide a relatively weak basis for group identity and for marital choice.

Notes

1. This idea was articulated as early as 1782, according to Kennedy (1944: 331).
2. For N=12, the critical value of the correlation coefficient at the conventional 5 per cent level of statistical significance is 0.53 (Fisher and Yates, 1957: 59). On this criterion, all six coefficients are significantly different from zero. These and other tests treat the ESB group as the majority or dominant groups and all other groups as minority groups.
3. Models 4 through 13 fit diagonal elements exactly. So the only source of variation between models concerns the fit of off-diagonal counts.
4. In the United States, Kennedy (1944) popularized the idea of a triple melting-pot: Protestants, Catholics, and Jews. There is no equivalent to the third melting-pot in these data because the fourth group, Western Asia, includes not only Jews but also persons of the Islamic faith. While this regional grouping reflects their geographical proximity, of course they constitute distinct marriage pools.
5. The questions on which McAllister and Moore (1991) base their analysis were as follows. 'Now I would like you to tell me how you feel about different groups of people in Australia . . . how close are you prepared to be with (German, Chinese, British, etc.) people?' Each respondent was queried about a score of groups in terms of different degrees of 'closeness': as a family member; as a close friend; as a neighbour; as a workmate; as an Australian citizen; as a visitor to Australia; and 'keep out of Australia altogether'. The use of the word 'people' in the main question is functionally equivalent to the ancestry question used in the 1986 Census. It refers to ethnic origin, not country of birth. The fact that our inductively derived scaling of ancestry groups differs so much from the ranking implied by these other data highlights the gap between attitudes and behaviour.
6. We calculate this decline as the sum of time (9.5) and the linear trend (minus 0.166), and time-squared (9.5*9.5) and the curvilinear effect (0.00332), or minus 1.277.
7. We calculate this effect as follows. The natural log of 100 is 4.605. The difference in the association effects over time is the difference between minus 0.513 less minus 0.405, or plus 0.108. Adding this effect to the log of 100 gives 4.713. Its antilog is 111, the figure quoted in the text.
8. We carried out specific tests for trends over time in endogamy effects, analogously to tests for trends in the association coefficient. We found statistically significant evidence of declining endogamy for persons of English-speaking background, Northwestern Europeans, Eastern Europeans, Greeks, Maltese, and Italians. We found no evidence of declines among other groups.
9. We wrote a GLIM macro to adjust the observed marriage counts. Using the logit parameter estimates for ethnic divorce rates in Table 4 of Jones (1994), we computed a matrix of logits for each ancestry group. We equated groups as follows: for persons of English-speaking ancestry, we used logits for divorce rates for persons born in an English-speaking country; for North-western Europeans, we used the mean for persons born in Germany or the Netherlands; for Eastern Europeans, we used the mean for persons born in Poland or Yugoslavia; for both Asian groups, we assumed low divorce rates and used estimates for Italians; for Macedonians, we used the estimate for Yugoslavs; for Greeks, we used the Greek estimate; and for all other (mostly Catholic) groups, we used the Italian estimate. In a second step, we weighted the matrix of logits according to the proportion of Australian-born versus foreign-born wives in each group across cohorts (using the proportions shown in Table 6 above, and the divorce logits for Australian-born versus overseas-born spouses). In a third step, we inflated off-diagonal estimates to allow for excess heterogamy. In a fourth step, we converted the logits to annualized divorce rates. In a fifth step, we calculated cumulative divorce rates for each cohort by multiplying annualized rates by five, ten, fifteen, 20, 25, 30, and 35, from the most recent to the most distant cohort. In a sixth and final step, we converted divorce rates to inflation factors in order to compute adjusted counts. Obviously, this adjustment procedure is inexact. It does not allow for changes over time in divorce propensities or for differing

probabilities of divorce over the marital life-cycle. However, we know of no data that would provide a more exact adjustment.

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Manuscript received: July 1994

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