

Could Hypomanic Traits Explain Selective Migration? Verifying the Hypothesis by the Surveys on Sardinian Migrants

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Abstract: *Introduction:* A recent survey put forward the hypothesis that the emigration that occurred from Sardinia from the 1960's to the 1980's, selected people with a hypomanic temperament. The paper aims to verify if the people who migrated from Sardinia in that period have shown a high risk of mood disorders in the surveys carried out in their host countries, and if the results are consistent with this hypothesis.

Methods: This is systematic review.

Results: In the 1970's when examining the attitudes towards migration in Sardinian couples waiting to emigrate, Rudas found that the decision to emigrate was principally taken by males. Female showed lower self-esteem than male emigrants. A study on Sardinian immigrants in Argentina carried out in 2001-02, at the peak of the economic crisis, found a high risk of depressive disorders in women only. These results were opposite to the findings recorded ten years earlier in a survey on Sardinian immigrants in Paris, where the risk of Depressive Episode was higher in young men only.

Discussion: Data point to a bipolar disorder risk for young (probably hypomanic) male migrants in competitive, challenging conditions; and a different kind of depressive episodes for women in trying economic conditions. The results of the survey on Sardinian migrants are partially in agreement with the hypothesis of a selective migration of people with a hypomanic temperament. Early motivations and self-esteem seem related to the ways mood disorders are expressed, and to the vulnerability to specific triggering situations in the host country.

Keywords: Bipolar Disorder, Hypomanic Temperament, Migration, Gender Difference, Sardinia, Goal Striving Stress.

INTRODUCTION

A recent study made 3 times over a period of 20 years (1988-2008) in a mining area of Sardinia, showed recently that lifetime frequency of depressive episodes decreased in the total sample (from 17.8% to 10.6%), in males (from 15.8% to 8.5%) and markedly in adults of both sexes aged 24 to 45 years (from 17.0% to 6.9%) [1]. It should be noted that in the three decades preceding the survey (1958-88) the population of the area decreased dramatically from about 8,000 to 5,000 inhabitants, due to the closure of mines in the area. A large proportion of those who migrated were young adults who formed the work-force. The authors advanced the hypothesis that migration might have selected individuals with a "hypomanic temperament", individuals with stable traits such as heightened energy, drive, ambition, confidence,

creativity and risk tolerance. On the other hand, these individuals might have been also at risk of mood disorders if they did not achieve their objectives and were left behind. This selective migration might have also decreased the number of people at risk of mood disorders in the area, and might have caused the reverse trend of frequency of mood disorders in the mining area over time.

Starting from this hypothesis, this paper examines the literature on emigration and mental health of Sardinian people in the past 50 years, with focus on motivation, adjustment and risk of mood disorders in Sardinian migrants. The paper aims to verify if the surveys on Sardinian migrants from the 1960's to the 1980's have shown a specific risk of mood disorder in the light of the hypothesis that Sardinian emigration may have selected people with a hypomanic temperament. Additionally the study aims to verify if the early literature on the motivation of Sardinians to migrate shows any evidence in agreement with this hypothesis. According to the theories of Murphy [2], many studies confirm that a generalized psychopathological risk is not present among immi-

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Table 1. ICD-10 Depressive Episodes, Lifetime Prevalence (%) by Sex and Age after Standardisation According to Age and Sex in Sardinian People Emigrated to Argentina. Standard Population: Sardinians in Sardinia

	Sardinians in Argentina	Sardinians in Sardinia	Or	CL 95%
Females	36.7	15.2	3.2	2.1-4.9
Males	15.0	11.8	1.3	0.7-2.5
Age 18-44	27.9	15.4	1.9	1.1-3.2
Age >44	25.6	12.5	2.6	1.5-4.5
Total	26.7	13.5	2.3	1.6-3.2

Females vs. Males in the Argentinian sample ($\chi^2=11.2$, $P=0.001$, $OR=3.1$, C.L. 95% 1.6-6.5); Age 18-44 vs. Age >44 in the Argentinian sample ($\chi^2=0.1$, $P=0.892$, $OR=0.9$, C.L. 95% 0.4-1.7).

Table 2. Depressive Episode, Lifetime Prevalence (%) by Sex in Parisians, Sardinian Residents in Paris and Residents in Sardinia (Standard Sample: "Parisians")

	Parisians	Sardinian Migrants	Sardinian Residents	X2 and P
Males*	12.4	16.2	11.8	7.1 P=0.02
Females °	25.0	18.8	15.2	22.7 P=0.001

*MALES Parisians vs. Migrants $\chi^2=2.7$, $P=0.1$

Parisian vs. Sardinians $\chi^2=0.1$, $P=0.71$

Sardinians vs. Migrants $\chi^2=3.6$, $P=0.06$

°FEMALES° Parisians vs. Migrants $\chi^2=1.4$, $P=0.24$

Parisians vs. Sardinians $\chi^2=21.5$, $P=0.001$

Sardinians vs. Migrants $\chi^2=0.5$, $P=0.50$

grants, thus "emigrants" do not form a homogeneous group in terms of risk of mental illness [3]. Furthermore, some meta-analyses find that there is not a generalized risk of mood disorders in migrants [4], thus this review is specifically focused on Sardinian studies.

METHODS

This systematic review compares the results of studies on the motivation for migration from the 1970's, with the results on the prevalence of mood disorders in Sardinian emigrants as evidenced in the studies carried out in the past decades. Both groups of studies were carried out by the research group on mental health in Sardinian migrants of the University of Cagliari. In addition a systematic review of the literature since July 2012 was carried out in PubMed and Psych info using the following keywords: "Sardinian Migration" (17 papers found) OR "Sardinian Emigration" (16 papers) OR "Sardinian Migration Depression" (2 papers) AND "Sardinian Migration Mental Health" (no papers found) OR "Sardinian Migration psychiatry" (3 papers found) OR "Sardinia migration mania" (1 paper) OR "Sardinia Migration hypomania" (no titles found) OR "Sardinia Migration Bipolar disorders" (1 paper). All the papers found out of those cited in this review [1, 3, 5, 6] didn't concern the theme of migration and mental health or mood disorders in Sardinian migrants. The early studies on motivation were published in Italian and they were not found in PubMed or Psychinfo, but in the archives of the University of Cagliari.

RESULTS

Early Sardinian Studies: Differences at The Time of Emigration

In the 1970's, a series of surveys by Rudas [7, 8] examined the attitudes toward emigration in Sardinian couples

waiting to emigrate to Argentina, Germany, France and Northern Italy, and produced the following observations:

1. The decision to migrate was principally taken by males;
2. Low self-esteem in female emigrants, but high self-esteem in male emigrants.

Risk Of Mood Disorders In Sardinian Emigrants

A study was carried out between 2001 and 2002, at the peak of the economic crisis caused by the default of Argentina, on the Sardinian people who had emigrated to Argentina from the 1950's to the 1970's [5]. The survey found a risk of depressive disorders only in women (Table 1). Comparing a homogeneous group of females living in Sardinia, the Odds Ratio for Depressive Episode among female emigrants was 3.2 against only 1.3 among male emigrants; regarding Depressive Episode, the difference between the male emigrants and residents in Sardinia was insignificant. Notably, age was found to be a factor (with a higher risk in people older than 44). Unfortunately the survey did not use a control group of Argentinians of non-Sardinian origin.

Surprisingly these results were opposite to those obtained around ten years earlier in a survey on Sardinian emigrants to Paris [6]. This study showed that the risk of Depressive Episode among the emigrants was higher compared to resident Sardinians, but only in men and the difference was on the threshold of statistical significance (Table 2).

A specific risk was found in young men. Table 3 shows the pooled data for the young subjects analyzed, of both sexes. Sardinian immigrants in Paris had twice the rate of Depressive Episode when compared to resident populations in Paris or Sardinia (Table 3). When comparing the sex-based rate in the 18-24 year age group, the difference remains significant still but only in men (33% versus 10%,

Table 3. Depressive Episodes, Lifetime Prevalence (%) by age in Parisians, Sardinians Migrated to Paris and Resident Sardinians (Standard Sample: Parisians)

	Parisians	Sardinian Migrants	Sardinian Residents	P
** AGE 18-24	12.8	33.3	15.0	0.02
°° AGE 25-44	20.2	12.2	14.1	0.04
## AGE 45-64	19.3	11.5	12.6	0.02
§§ AGE >65	21.9	33.0	30.1	0.01

18-24 **PvsM $\chi^2=5.5$, P=0.02, PvsS $\chi^2=0.2$, P=0.6; S vs M $\chi^2=3.8$, P=0.05
 24-44 °°PvsM $\chi^2=0.1$, P=0.84, PvsS $\chi^2=6.1$, P=0.01; S vs M $\chi^2=0.2$, P=0.62
 45-64 ##PvsM $\chi^2=1.1$, P=0.21, PvsS $\chi^2=6.2$, P=0.001; S vs M $\chi^2=0.1$, P=0.96
 >65 §§PvsM $\chi^2=0.9$, P=0.33, PvsS $\chi^2=6.4$, P=0.01; S vs M $\chi^2=0.1$, P=0.96

Table 4. Depressive Episode, six-Month Prevalence (%) and Proportion of Lifetime Prevalence in Parisians, Sardinians in Paris and Sardinians Resident in Sardinia

	Parisians	Sardinian Emigrants	Sardinian Residents	X2+	P
Depressive Episode	5.9	11.8	6.5	8.4	0.01
Six Month proportion of Lifetime Prevalence	30%	56%	45%		

Depressive Episode: PvsM $\chi^2=6.3$, P=0.01, PvsS $\chi^2=0.1$, P=0.94; SvsM $\chi^2=4.0$, P=0.04

P<0.05) and not in women (33% versus 20%). It should be noted that first-generation young emigrants of the late 1980's, who are representative of migrants with a high level of education in search for technical jobs [6], were particularly susceptible.

Furthermore, emigrants to Paris were characterised by a higher absolute frequency of Depressive Episode over the previous six months (Table 4) compared to the Parisians or the resident Sardinians, and by a higher percentage of lifetime prevalence (56% against 43% in Sardinians residing in Sardinia and 30% in Paris), indicating a higher proportion of people who did not recover after a Depressive Episode and/or had a higher risk of new episodes after recovery. This is a likely indication of an increased vulnerability to recurrences and chronicity compared to Parisians or resident Sardinians. This characteristic was not found in depressed people who had migrated to Argentina.

Another relevant point, when compared to the sample subjects residing in Sardinia, is that the depressed emigrants to Paris presented a higher frequency of co-morbidity with substance abuse and anxiety disorders [6]. The Sardinian emigrants to Paris were found to have a higher frequency of occurrence of mood disorders among men, as well as among younger people. These also had a greater frequency of recurrence of episodes – chronicity, higher co-morbidity, alcohol and substance abuse, and anxiety disorders.

DISCUSSION

The results of the surveys on Sardinian migrants seem to support the hypothesis of a selective migration of people with a hypomanic temperament, as proposed in a recent community survey in Sardinia conducted several times over 20 years, even though this interpretation seems more appropriate for men than for women.

The results that are consistent with the above hypothesis are to be found in: 1) an early study on motivation; 2) the

high risk of depressive episodes in the samples of Sardinian migrants to Paris and Argentina, and particularly in the young males who had migrated to Paris; 3) the fact that the depressive episodes in young male migrants to Paris show comorbidity with alcohol abuse and anxiety disorders; 4) those depressive episodes' being characterized by risk of recurrence and chronicity if compared with the depressive episodes of Parisians and Sardinian people residing in Sardinia.

The above-cited early study on motivation indicated that the men who left Sardinia in the Seventies had high self-esteem, and had a strong motivation to migrate with strong positive expectations about migration. The motivation to migrate has specific characteristics in each migration wave and it is considered one of the most important factors representing a risk or a protection for the mental health of migrants [9].

The findings of the early Sardinian study on the motivation to migrate were similar to those presented by an earlier study in a different cultural setting, namely Ireland, which shows homogeneity in some cultural and religious backgrounds. In the 1990's Carlson and Nielsen [10] found that among the Irish immigrants to the US, women viewed the prospect of emigration less positively than men, and that migrant women had a higher rate of depression than the women who did not emigrate. This pattern was not evident in men.

The fact that the decision to migrate was principally taken by males is not surprising, due to the family decision-making pattern in the Sardinian culture of that time, and the role of males in managing the family destiny [8]. One major reason for emigration was economic hardship, but not all males with the same or similar economic problems took the decision to migrate. Frequently when a family had a small estate that was insufficient for two brothers or more, one brother stayed and the others left. The entire family decided who would stay and who was to leave; probably emigration would have thus selected males with an attitude to explore, to discover new ways, with ambitious objectives, good activ-

	Paris Early 1990's	Argentina 2001-2202
Economic Conditions	Good situation economy improved	Default, drastic crisis
Opportunities / Risk in the social world	Work opportunities, particularly in new fields; loss of protective tradition, goal striving stress	Loss of years of work, uncertainty about the future, risk for family safety
Hypothesis on psychological consequences concerning Opportunities / Risk	Risk/opportunities for people with attitude to competition	Risk/opportunities of copying for people with a pessimistic view of the future

Fig. (1). The period when surveys were made in Argentina and Paris.

ity skills and high self-esteem, as was indicated by the Sardinian surveys (and by the Irish surveys, too).

The selection of hypomanic people was probably unlikely in Sardinian female emigrants, who could not choose to emigrate, had a low self-esteem and, for cultural reasons, had to follow their partners. These differences may underlie the gender difference in the risk of mood disorders, since both surveys in the literature found a risk of mood disorders in Sardinian emigrants, although the risk differs by gender in the two surveys.

It is important to underline the two diametrically opposite economic conditions between Paris and Argentina in which the two migratory waves occurred (see Fig. 1). Paris offered successful work opportunities, but also a new world based on competition. Even though France is closer to Sardinia than Argentina there was a risk, especially for young people, of losing their traditions and family ties. The hypothesis that arises from the Sardinian studies is that female emigrants, possibly having a more frequent "depressive" interpretation of self and knowledge, might be more involved in difficult situations when the family safety is under the threat of economic instability.

Consistently with the constructivist cognitive concepts [11], a "depressive style of knowledge" would imply a system whereby the individual explicitly attempts to preserve a consistent image by applying a theory that contemplates a pessimistic view of the world and the future, assuming a sort of "defeat-oriented hyper-responsibility", and tacitly challenging the losses experienced. Paradoxically, when faced with stressful conditions of challenge for social change (as in the study in Paris), depressive attitudes may exert a protective factor.

On the other hand this self-responsibilization [12] of the female migrants may define a different kind of hyperergic trait, even if it tends to "culture oriented" altruism and gregarious roles and not toward hypomanic self-affirmation.

The young, male Sardinian migrants who have a goal-oriented attitude according to the early study on motivation, may be more at risk in situations favoring rapid improvement where the competitive challenge becomes pressing. These situations may increase the risks for an emigrant, particularly a young male, if they prove unable to achieve the socially-set goals, what Klein and Parkers describe as "goal striving stress" [13]. At the same time, the challenging new scenario may offer the opportunity to get rid of a traditional role and its protective function as related to the emigrant/social protective network. The Sardinian emigrants' network and its protective effects were actually analyzed in the 1970's in the early studies by Rudas [8].

Concerning the high rate of Depressive Episode, both in Argentina and in Paris a higher rate of Depressive Episode

was recorded among emigrants, which can be interpreted as an increase of Major Depression and – or Bipolar Disorders. The methods now employed in epidemiological psychiatry and, particularly, the simplified structured tool utilized in both studies on Sardinian emigrants [14-16] are not capable of distinguishing between bipolar disorders and unipolar major depressive disorders [17, 18]. However the hypothesis of a different kind of Depressive Episode in the two different settings may be supported; when compared to Major Depressive Disorder, Bipolar Disorder is characterized by earlier onset [19], a higher risk of recurrence and chronicity [20], a male/female ratio of 1:1 (against 3:1) and by a frequently observed co-morbidity with substance abuse [21] and anxiety disorder [22-24]. All these characteristics were found in the episodes of depression of Sardinian emigrants in Paris, but not in Argentina. This may put forward the hypothesis that the increased rate of depression among highly competitive subjects was associated with an increase in bipolar disorder, and that the increased rate of depression among Sardinian female emigrants living in conditions of economic hardship, as in Argentina in 2001-2002, was associated with an increased risk of depressive disorders with different characteristics and course as against the depressive episodes with hypomanic traits.

Of course the lifestyle in a challenging urban condition as is Paris, may offer young people a series of co-factors that trigger bipolar disorders such as drug availability, reversal of circadian rhythms, noise [25]. All these factors may interact exponentially with a hyperactive attitude and goal striving stress.

LIMITS

Our study has some significant limitations. The first is the small size of the sample studied by the epidemiological surveys in Argentina and Paris. Second, the specificity of Sardinian emigration does not allow any generalization of the results. Finally, the observational methodology of the epidemiological studies can prove ineffective to verify a complex scenario. In this case community surveys, like the ones cited here, should be viewed only as a source for generating hypothesis/possibilities and the results of this review must be considered only as a heuristic contribution to stimulate future research works in the field. All these factors considered as a source of difference in inducing mood disorders in a host country need to be verified by further studies.

CONCLUSIONS

Our paper suggests the following conclusions:

1. The hypothesis that the people who emigrated from Sardinia between 1960's and 1980's had hypomanic traits seems more appropriate for men than for

women. Female migrants had probably more depending personality traits.

2. The people who migrated from Sardinia show a higher risk of mood disorders but the risk differs by sex in different settings. In Sardinian emigrants, motivations and self-esteem seem related to the modalities of expression of mood disorders, and to differences in the vulnerability to risk-triggering situations in the host country.
3. The data are suggestive of a bipolar disorder risk for young (probably hypomanic) men in competitive, challenging conditions.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

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