Research article
Ερευνητική εργασία

Association between happiness and psychopathology in an elderly regional rural population in Crete

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Research has shown that socio-demographic profile and psychopathology symptoms are related to levels of happiness in old age. The aims of this cross-sectional study were: 1) to investigate the effect of recent stressful life events and socio-demographic factors on psychopathological symptoms in elderly residents in mountain regions of Crete, Greece and 2) to explore the mechanism which underlies the relationship between socio-demographic factors and psychopathological symptoms, with levels of happiness in old age. To this end, we used the nine psychopathology dimensions of symptoms as defined in the Symptom Checklist-90-R (SCL-90), while the Holmes and Rahe stress inventory was administered to quantify the stressful life events. A sample of 205 elderly men and women (age=77.1±6.7 years) living in 10 remote rural and isolated villages participated in this study. Data was collected through questionnaires completed upon individual meetings with each participant, with the interviewer's assistance. Each questionnaire included the two aforesaid scales alongside questions on individual socio-demographic characteristics. Analysis of variance was applied to detect socio-demographic factors that have a significant effect on specific psychopathological symptoms. Then, path analysis was applied to quantify the direct and indirect effect of the selected socio-demographic factors on happiness levels. Stressful life events were found to have no statistically significant effect on the presence of specific symptoms (somatization, psychoticism, anxiety) in elderly adults. Furthermore, certain socio-demographic factors (marital status, smoking, family income and social activity) were found to influence happiness, which varied according to the level of psycho-emotional tension. The results suggest that somatization, psychoticism, and phobic anxiety symptoms are psychic reactions independent of recent stressful life events. Our study,despite its regional character, may contribute in the develop-

ment of appropriate clinical assessment tools and interventions, helping primary care practitioners to approach elderly people living in remote villages in a more appropriate and holistic manner, improving thereby the effectiveness of their interventions.

Key words: Psychological distress, life stressful events, somatization, psychoticism, phobic anxiety.

Introduction

The association between stressful life events and presence of psychopathological symptoms in adult life has been extensively studied in the literature and a clear connection has been established. Physical health problems and stressful life events often co-exist and contribute to the appearance of mental-health problems in the elderly (i.e. those aged >65 years).[1,2] However, the association between demographic variables and mental health has not been sufficiently studied in elderly populations residing in rural, remote villages. More specifically, a research gap exists on the relation between socio-demographic factors and happiness levels, as well as on how psychopathology affects this relationship in this target group. Such studies on mental health in the elderly population in rural and remote regions are of utmost importance, considering the special characteristics of these areas, such as low population density with small settlements and poor accessibility to healthcare services.[3]

Research suggests that several factors have an impact on mental health in the elderly. Marriage and a close social network have been positively associated with psychological well-being and happiness,[4–7] whereas low socio-economic status, stressful life events, and living alone[8] have been identified as risk factors for the development of psychopathological symptoms.[9,10] Moreover, smoking and alcohol consumption have been reported to correspond with increased levels of depression in elderly people.[11,12] A link between a high body mass index (BMI) and depression is also reported,[13] as well as a link between high BMI and high levels of hostility.[14]

Poor physical health in old age has been linked with depression,[15] anxiety disorders,[16,17] high levels of hostility,[14] and psychotic symptoms.[18] Depression and anxiety in the elderly may often co-exist with somatic illnesses[19] and habitually manifest through somatic symptoms.[4] In addition, medical conditions are frequently associated with manifestation of somatization symptoms in the elderly.[20] As a result, late-life depression can lead to increased number of medical appointments per year, increased use of hospitals, and longer duration of hospital stay.[12,21] Anxiety disorders are also a primary cause of hospitalization and increased use of health services.[22]

Previous studies have highlighted that unfavourable social, economic, and environmental circumstances can have a significant negative impact on mental health. In regards with elderly rural populations, major stressful life events, such as illness or bereavement, can trigger depression, anxiety states, panic syndromes, and post-traumatic stress disorder.[23] Thus, it is of a significant interest to investigate the way in which various socio-demographic factors affect the presence of psychopathology symptoms in the sample being studied, and the impact on the subjects' happiness.

Material and method

Subjects and procedure

The present study took place from January 2015 to January 2016 in the mountain villages of Crete, Greece. A convenience sample of elderly (i.e., above 65 years old) men and women living in 10 rural and remote villages was chosen from the population registers of the Prefectures of Chania and Rethymno. These villages were selected through a list of rural villages of Chania and Rethymno and specifically of the Municipality of Sfakia, Selinou, and Milopotamou. The selection of villages on these regional areas was solely based on them being at an altitude of more than 350 meters above sea level. For the sample selection a door-to-door snowball sampling method was used. Older adults who: (i) did not live in private households (e.g., guests or homeless), (ii) had cognitive impairment as assessed by the first investigator, and (iii) did not give their

consent, were excluded from the study. Approval of the study protocol was obtained from the ethics committee of the Medical School of the University of Crete (Heraklion, Greece; protocol number: 385/28/05/2008).

All questionnaires were completed upon individual meetings with each participant, with the interviewer's assistance. The interviewer was reading the items aloud to the elderly and was recording their answers. This method was chosen because the population was, overall, of low educational level, which could potentially cause difficulties in completing the self-reporting parts of the questionnaires. The participants' capacity to participate and consent was formally assessed by the first investigator, who is a Consultant Psychiatrist. Information on the purpose of the study was given verbally to participants and additional clarifications were provided when required. All interviews were carried out during individual home visits. Each interview lasted less than one hour.

Instruments

Psychopathology symptoms

The Greek version of the Symptom Checklist-90-R (SCL-90-R)[24] was administered in order to detect a wide range of symptoms of psychopathology, as well as their intensity. It is a 90-item self-report measure of current, point-in-time, psychological symptoms. Each item is scored on a five-point Likert scale of distress ranging from 0 (none) to 4 (extreme) and indicates the prevalence of symptom occurrence during the time reference.[25] SCL-90-R consists of nine primary symptom dimensions: (i) Somatization, (ii) Obsessive-Compulsive, (iii) Interpersonal Sensitivity, (iv) Depression, (v) Anxiety, (vi) Hostility, (vii) Phobic Anxiety, (viii) Paranoid Ideation, and (ix) Psychoticism. This scale also produces three global indices of distress: (i) Global Severity Index (GSI), which is a global index of distress and is the mean value of all 90 items; (ii) Positive Symptom Distress Index (PSDI); which is an intensity index and is the mean score of the items scored above zero; (iii) Positive Symptom Total (PST), which is the number of items scored above zero. Higher scores on SCL-90-R subscales indicate psychopathological symptoms of increased intensity.

Stressful life events

The Holmes and Rahe stress inventory[26] consists of 43 stressful life events that took place during the past year of the individual's life, which were found to frequently precede illness onsets, thus potentially affecting the individual's health. Its purpose is to provide a single measure reflecting the influence of these stressful events on a person's health over a one-year period. The participants select the events and a score is calculated (herein denoted as LSI) by summing up the corresponding weights associated with each selected event. This score indicates the probability that the subject will become ill. A total score of ≤150 is normal, while a score between 150 and 300, implies that there is an almost 50% chance of getting ill in the next 2 years. Gerst et al[27] tested the reliability of the Holmes and Rahe stress inventory and found that rank ordering remained extremely consistent both for healthy adults (r=0.96 –0.89) and patients (r=0.91 to 0.70).

Demographic and social data

Participants reported their age, sex, educational and marital status and the monthly income of the main provider in of the family. Furthermore, they answered questions about the frequency of their social life activities; this was defined as "kafeneio"(=coffeehouse) visits for men; neighbour/friend visits for women. These activities were chosen because they were thought to be the most prevalent social activities for each sex accordingly, consistent with the cultural norms in this predefined geographical area.

Happiness

To assess happiness, participants answered questions about the level of happiness they experienced living in a village, based on a 5 – item Likert scale. This last response was used in the path model as an indicator of overall happiness.

Health status and access to healthcare services.

Presence of chronic physical illness (somatic illness lasting for more than 12 months), treatment with medications, smoking status and consumption of alcohol were recorded. Since there were many

groups with small frequency in both smoking status and alcohol consumption variables, both were reformed into two binary variables (smoking – non-smoking, and no consumption of alcohol – consumption of one to two units per day). Height and weight of participants were self-reported. BMI was calculated using the metric system measurements (kilograms and meters); according to World Health Organization classification, overweight was defined as BMI between 25 and 29.9 kg/m^2, and obesity was defined as BMI≥30 kg/m^2. In addition, participants reported on the distance of their residence to the nearest health centre, the number of physician visits in the previous month, and the number of hospitalizations during the last 12 months.

Statistical analysis

All data were analysed using SPSS statistical package (version 20) and R statistical language (R Core Team, 2013) equipped with lavaan package.[28] Independent samples t-test was applied in order to specify the psychopathological symptoms which significantly differentiated from typical values for Greek population.[24] The values which were found to be significantly higher in the sample, compared to the typical Greek population, were further examined for their influence on happiness with an appropriate path model; the Holmes and Rahe stress score, socio-demographic and medical factors were included as exogenous variables, whereas happiness was the dependent variable. The selected psychopathological symptoms were positioned as mediators in the relationship between socio-demographic variables and happiness.

The mahalanobis distance was calculated for all cases and two cases were identified as multivariate outliers, thus excluded from the subsequent analysis. The model was tested using the maximum likelihood estimation. Effects with $p<0.05$ were considered statistically significant.

Results

The sample consisted of 205 participants aged 65–93 years old (M=77.1, SD=6.7). Demographic and medical characteristics of the participants are presented in table 1. All villages were located at an altitude of more than 350 meters above sea level and the mean distance to the nearest health centre was 22.8 km.

Table 1. Demographic and medical characteristics of the participants.

Characteristic	N (%)
Age, mean (SD)	77.1 (6.7)
Gender	
Men	101.0 (49.3)
Women	104.0 (50.7)
Educational level	
None	36.0 (17.6)
Primary school	149.0 (72.7)
Middle/High school	20.0 (9.8)
Married	157.0 (76.6)
How often do you go to the coffee-house (for men)/visit your neighbor/ friend (for women)	
Everyday	165.0 (81.3)
Often	10.0 (4.9)
Rarely	12.0 (5.9)
Never	16.0 (7.9)
Smoking	27.0 (13.2)
Body Mass Index	
Normal	66.0 (32.2)
Overweight	96.0 (46.8)
Obese	43.0 (21.0)
Alcohol consumption	65.0 (31.7)
Chronic somatic disease	189.0 (92.2)
Medication	143.0 (69.8)
Distance to nearest health center, mean (SD)	22.8 (9.2)
Number of visits to a physician in the last month, median (IQR)	1.0 (0–2)
Number of hospitalizations during last 12 months, median (IQR)	0.0 (0–0)
Monthly income of the person gaining the main income in the house (euros)	
≤500	62.0 (30.2)
500–1000	111.0 (54.1)
1000–1500	22.0 (10.7)
1500–2000	10.0 (4.9)

Most of the participants were satisfied (N=84, 41%) or very satisfied (N=90, 43.9%) from their life in the village.

Somatization (SOM) (p=0.001), psychoticism (PSY) (p<0.001), and phobic anxiety (PHB) (p<0.001), were significantly higher than typical healthy Greek population. The rest of the psychopathological symptoms were either significantly lower or did not have a significant difference compared to the typical Greek population (table 2).

The theoretical model presented in figure 1 was formulated and tested. The model had a very good fit, with a non-significant chi-square ($c^2(33)=40.557$, p=0.172); this implies that the assumed path model is adequate for the data, that is, the sample covariance matrix was not significantly different from the model-based estimated covariance matrix.

The model had a very good fit to the data ($c^2(78)=386.240$, p<0.001), accounting for 39.5% of phobic anxiety, 27.8% of somatization, 26.7% of psychoticism and 23.6% of happiness variances (table 3).

The standardized regression coefficients are presented in figure 2.

Alcohol consumption (ALK) did not have a significant effect on the presence of psychopathology symptoms ($p_{SOM}=0.376$, $p_{PHB}=0.355$, $p_{PSY}=0.055$), while it had a significant negative effect on happiness (HPN) ($b_{std}=-0.194$, b=−0.075, p=0.007). Smoking (SMK) also did not have a significant effect on somatization, phobic anxiety and on happiness ($p_{SOM}=0.444$, $p_{PHB}=0.648$, $p_{HPN}=0.090$). Nevertheless, smokers had higher levels of psychoticism than non-smokers ($b_{std}=0.158$, b=0.033, p=0.015).

In regards with the total score of Holmes and Rahe stress inventory (denoted as LSI), it was not found to have a significant effect on psychopathology ($p_{SOM}=0.980$, $p_{PHB}=0.564$, $p_{PSY}=0.251$) while it had a significant negative effect on happiness (HPN) ($b_{std}=-0.206$, b=−0.001, p=0.004).

There was no statistically significant correlation between larger than normal body weight (OVW) and the presence of psychopathological symptoms and happiness scores. However, obesity (OBS) was linked with a higher score of somatization ($b_{std}=0.248$, b=3.665, p<0.001) and happiness, whereas somatization significantly mediated the relation of obesity and happiness ($b_{std}=0.197$, p=0.003).

Health status represented by the presence of a disease (BDD) and number of hospitalizations during last year (HSP) was found to significantly correlate with psychopathology symptoms. In particular,

Table 2. Psychopathological symptoms in study population: Deviation from normal values.

Scale	Present Study	Population*	t	p
	Mean (SD)	Mean (SD)		
SOM	*10.6 (6.3)*	*7.4 (7.1)*	*3.219*	*0.001*
OC	9.0 (4.0)	9.5 (6.5)	0.987	0.325
IS	8.4 (4.5)	8.4 (6.2)	0.000	1.000
DEP	13.6 (7.1)	11.3 (8.8)	1.733	0.084
ANX	*5.3 (3.9)*	*7.3 (6.7)*	*3.966*	*0.000*
HOS	*3.6 (2.9)*	*5.1 (5.1)*	*5.271*	*0.000*
PAR	*2.8 (2.8)*	*6.1 (4.4)*	*13.651*	*0.000*
PSY	*8.3 (2.9)*	*6.1 (6.8)*	*5.757*	*0.000*
PHB	*4.1 (3.6)*	*2.5 (3.7)*	*5.140*	*0.000*
GSI	0.71 (0.3)	0.7 (0.6)	0.171	0.865

* Donias et al, 1991

M=mean, SD=standard deviation, SOM=somatization, OC=obsessive-compulsive, IS=interpersonal sensitivity, DEP=depression, ANX=anxiety, HOS= hostility, PHB=phobic anxiety, PAR=paranoid ideation, PSY=psychoticism, GSI=Global Severity Index. Significant differences are bold.

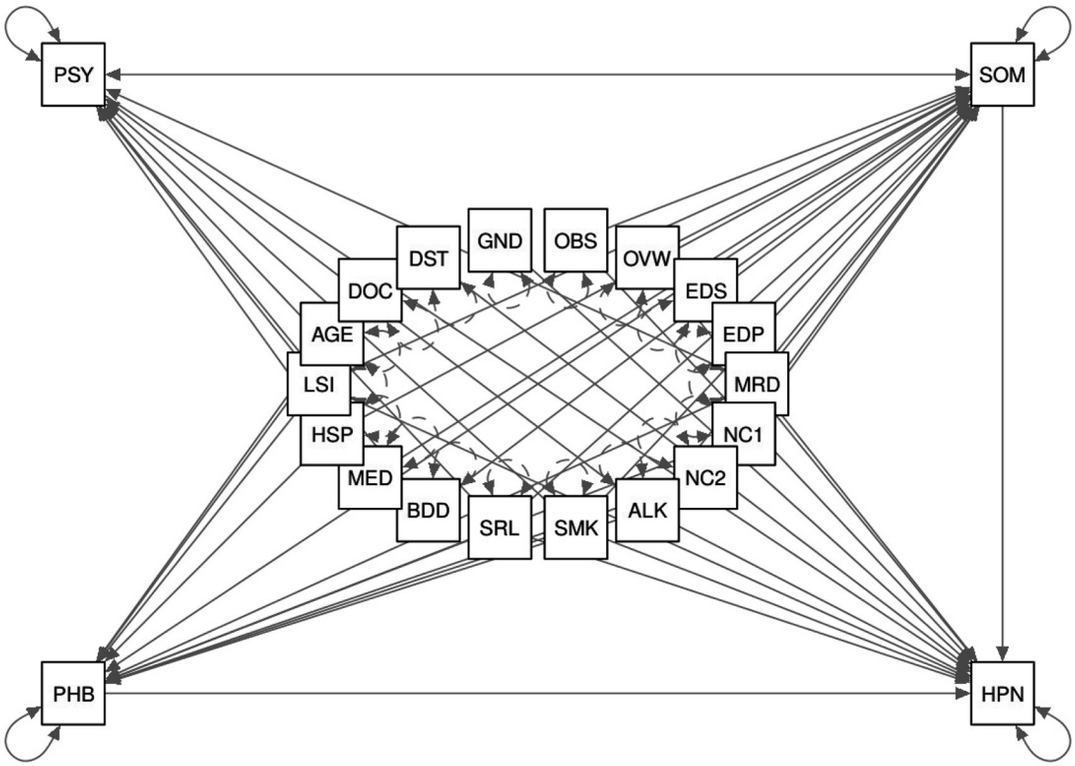

Figure 1. Theoretical model.
SOM=somatization, PSY=psychoticism, PHB=phobic anxiety, HPN=happiness, AGE=age, GND=gender, OBS=obesity, OVW=overweight, EDP=educational level primary, EDS=educational level secondary, MRD=married family status, NC1=income less than 500 €, NC2=income 500–1000 €, SRL=social relations, SMK=smoking, ALK= alcohol consumption, BDD=body disease, MED=medicine, DOC=number of visits at doctors, HSP=number of hospitalization, LSI=Stressful life events score.

a body illness (BDD) was found to correspond with higher scores of somatization (b_{std}=0.136, b=3.181, p=0.018), and psychoticism (b_{std}=0.195, b=2.032, p=0.002), while number of hospitalizations during last year (HSP) was found to correlate with somatization (b_{std}=0.161, b=0.933, p=0.012), phobic anxiety (b_{std}=0.224, b=0.515, p<0.001) and psychoticism (b_{std}=0.159, b=0.411, p=0.011). Similarly, the number of visits at doctors during last month (DOC) corresponded to higher score of phobic anxiety (b_{std}=0.272, b=0.649, p<0.001).

Married participants (MRD) were found to have lower scores in both psychopathology and happiness. More specifically, they were found to have lower scores of somatization (b_{std}=−0.229, b=−3.301, p=0.015), phobic anxiety (b_{std}=−0.396, b=−2.271, p<0.001) and psychoticism (b_{std}=−0.421, b=−2.711, p<0.001), while they also had lower levels of happiness (b_{std}=−0.340, b=−0.297, p<0.001).

Participants belonging in both low- and medium-income groups were found to have higher scores of both somatization and phobic anxiety. Moreover, frequent social activities were found to correspond to lower scores of somatization (b_{std}=−0.178, b=−3.163, p=0.005), phobic anxiety (b_{std}=−0.124, b=−0.873, p=0.031), psychoticism (b_{std}=−0.139, b=−1.103, p=0.025) and higher levels of happiness (b_{std}=0.131, b=0.141, p=0.046).

Regarding the direct effects of psychopathology on happiness, somatization was found to have a significant positive effect on happiness (b_{std}=0.246, b=0.015, p=0.001), while psychoticism corresponded to lower score on happiness (b_{std}=−0.314, b=−0.043, p<0.001). Finally, the total (direct and indirect)

Table 3. Path model's parameters (1).

		95% CI							
	Estimate	**Lower**	**Upper**	**Std. Err**	**z-value**	**p**	**Std. lv(2)**	**Std. all(3)**	**R^2**
SOM ~									0.278
	OBS	*3.665*	*1.850*	*5.480*	*0.926*	*3.959*	*0.000*	*3.665*	*0.248*
	OVW	0.844	–0.635	2.324	0.755	1.118	0.263	0.844	0.071
	EDS	–2.199	–5.131	0.732	1.496	–1.471	0.141	–2.199	–0.111
	EDP	*–3.637*	*–5.422*	*–1.853*	*0.910*	*–3.995*	*0.000*	*–3.637*	*–0.271*
	MRD	*–3.301*	*–5.962*	*–0.641*	*1.357*	*–2.432*	*0.015*	*–3.301*	*–0.229*
	NC1	*3.119*	*0.321*	*5.917*	*1.428*	*2.185*	*0.029*	*3.119*	*0.235*
	NC2	*2.986*	*0.810*	*5.162*	*1.110*	*2.690*	*0.007*	*2.986*	*0.248*
	ALK	0.370	–0.450	1.191	0.419	0.885	0.376	0.370	0.058
	SMK	0.025	–0.038	0.088	0.032	0.766	0.444	0.025	0.053
	SRL	*–3.163*	*–5.367*	*–0.958*	*1.125*	*–2.812*	*0.005*	*–3.163*	*–0.178*
	BDD	*3.181*	*0.557*	*5.804*	*1.339*	*2.376*	*0.018*	*3.181*	*0.136*
	MED	1.186	–0.250	2.622	0.733	1.619	0.106	1.186	0.092
	HSP	*0.933*	*0.209*	*1.656*	*0.369*	*2.527*	*0.012*	*0.933*	*0.161*
	LSI	–0.000	–0.015	0.015	0.008	–0.025	0.980	–0.000	–0.002
PHB ~									0.395
	AGE	*–0.100*	*–0.137*	*–0.063*	*0.019*	*–5.329*	*0.000*	*–0.100*	*–0.284*
	MRD	*–2.271*	*–3.243*	*–1.299*	*0.496*	*–4.580*	*0.000*	*–2.271*	*–0.396*
	NC1	*1.636*	*0.641*	*2.632*	*0.508*	*3.221*	*0.001*	*1.636*	*0.309*
	NC2	*2.272*	*1.508*	*3.036*	*0.390*	*5.828*	*0.000*	*2.272*	*0.474*
	SRL	*–0.873*	*–1.665*	*–0.081*	*0.404*	*–2.159*	*0.031*	*–0.873*	*–0.124*
	DOC	*0.649*	*0.400*	*0.897*	*0.127*	*5.122*	*0.000*	*0.649*	*0.272*
	HSP	*0.515*	*0.247*	*0.782*	*0.136*	*3.775*	*0.000*	*0.515*	*0.224*
	ALK	–0.139	–0.434	0.156	0.151	–0.924	0.355	–0.139	–0.055
	SMK	–0.005	–0.027	0.017	0.011	–0.456	0.648	–0.005	–0.028
	LSI	0.002	–0.004	0.007	0.003	0.577	0.564	0.002	0.037
PSY ~									0.267
	MRD	*–2.711*	*–3.606*	*–1.816*	*0.457*	*–5.937*	*0.000*	*–2.711*	*–0.421*
	SRL	*–1.103*	*–2.068*	*–0.139*	*0.492*	*–2.243*	*0.025*	*–1.103*	*–0.139*
	SMK	*0.033*	*0.006*	*0.059*	*0.014*	*2.435*	*0.015*	*0.033*	*0.158*
	BDD	*2.032*	*0.764*	*3.300*	*0.647*	*3.141*	*0.002*	*2.032*	*0.195*
	HSP	*0.411*	*0.096*	*0.726*	*0.161*	*2.555*	*0.011*	*0.411*	*0.159*
	ALK	0.351	–0.007	0.709	0.183	1.922	0.055	0.351	0.123
	LSI	–0.004	–0.010	0.003	0.003	–1.148	0.251	–0.004	–0.081
HPN ~									0.236
	OBS	*0.143*	*0.011*	*0.275*	*0.067*	*2.120*	*0.034*	*0.143*	*0.160*
	OVW	0.088	–0.015	0.191	0.052	1.680	0.093	0.088	0.121
	DST	–0.005	–0.009	0.000	0.002	–1.883	0.060	–0.005	–0.119
	GND	–0.103	–0.220	0.013	0.060	–1.735	0.083	–0.103	–0.143
	MRD	*–0.297*	*–0.439*	*–0.155*	*0.073*	*–4.091*	*0.000*	*–0.297*	*–0.340*
	SRL	*0.141*	*0.003*	*0.278*	*0.070*	*1.996*	*0.046*	*0.141*	*0.131*
	SMK	0.004	–0.001	0.008	0.002	1.694	0.090	0.004	0.126
	ALK	*–0.075*	*–0.130*	*–0.021*	*0.028*	*–2.720*	*0.007*	*–0.075*	*–0.194*
	SOM	*0.015*	*0.006*	*0.024*	*0.005*	*3.207*	*0.001*	*0.015*	*0.246*
	PHB	–0.011	–0.034	0.011	0.012	–0.972	0.331	–0.011	–0.074
	PSY	*–0.043*	*–0.061*	*–0.024*	*0.010*	*–4.417*	*0.000*	*–0.043*	*–0.314*
	LSI	*–0.001*	*–0.002*	*0.000*	*0.000*	*–2.888*	*0.004*	*–0.001*	*–0.206*

(1) TLI=0.942, NFI=0.895, NNFI=0.942, CFI=0.975, GFI=0.923, SRMR=0.023, RMSEA=0.034, (2) Dependent Variables are standardized, (3) Completely standardized solution (estimates of parameters if the variances are unity). SOM=somatization, PSY=psychoticism, PHB=phobic anxiety, HPN=happiness, AGE=age, GND=gender, OBS=obesity, OVW=overweight, EDP=educational level primary, EDS=educational level secondary, MRD=married family status, NC1=income less than 500 €, NC2=income 500–1000 €, SRL=social relations, SMK=smoking, ALK=alcohol consumption, BDD=body disease, MED=medicine, DOC=number of visits at doctors, HSP=number of hospitalization, LSI=The Holmes and Rahe stress inventory score

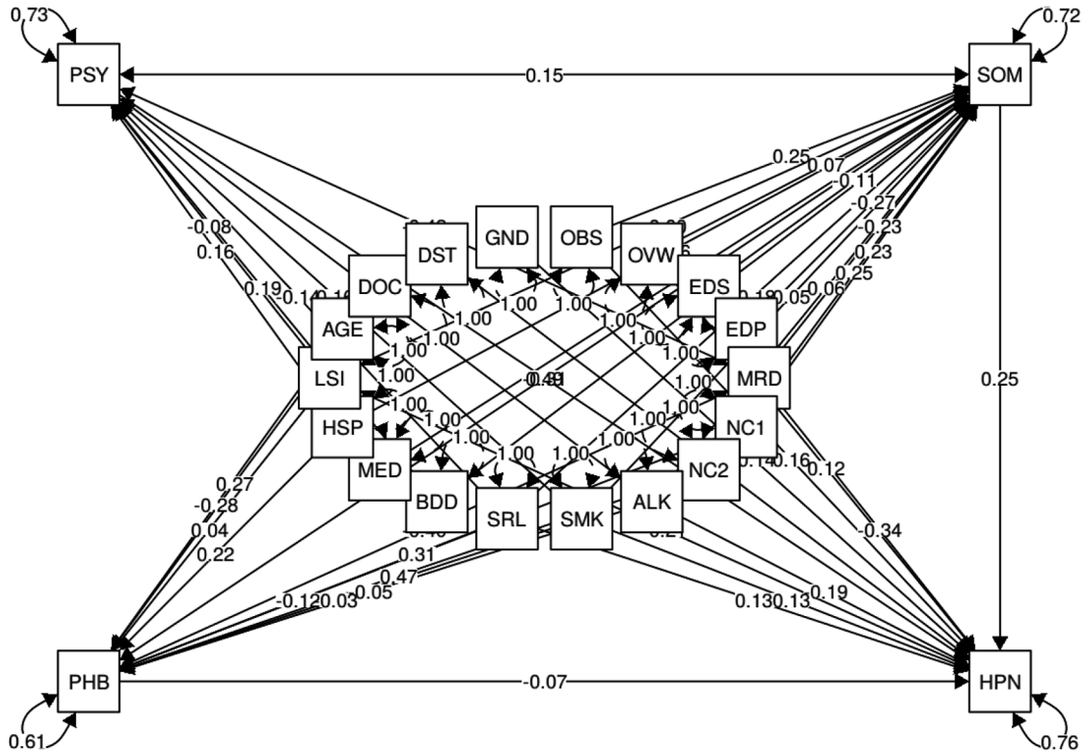

Figure 2. Path analysis results on the effect of socio-demographic factors on happiness having phobic anxiety, psychoticism and somatization as mediators. (Standardized estimates, N=199).
SOM=somatization, PSY=psychoticism, PHB=phobic anxiety, HPN=happiness, AGE=age, GND=gender, OBS=obesity, OVW=overweight, EDP=educational level primary, EDS=educational level secondary, MRD=married family status, NC1=income less than 500 €, NC2=income 500–1000 €, SRL=social relations, SMK=smoking, ALK=alcohol consumption, BDD=body disease, MED=medicine, DOC=number of visits at doctors, HSP=number of hospitalization, LSI=Stressful life events score

effect of income on happiness was not statistically significant (p=0.730). The above findings are summarized in the table 4.

Discussion

Overall, this study highlights the mediating role of specific psychopathological symptoms (as measured by the SCL-90) between socio-demographic characteristics and happiness in a sample of elderly regional residents in rural and remote areas. More specifically, the presence (or not) of somatization, phobic anxiety, and psychoticism was found to influence the various associations between happiness and socio-demographic factors (i.e. married status, obesity, low income, and poor social relations) in our target group.

At the same time, it shows the lack of correlation between stressful life events during the previous year of life (as measured by the Holmes and Rahe stress inventory) and the specific psychopathology symptoms of somatization, phobic anxiety, and psychoticism. Hence, it might be that psychic reactions and the later development of certain symptoms of psychopathology in this target group are affected by factors not measured in this study and not so much by recent stressful events in subjects' lives.

This study also found that most of the participants (84.9%) were happy or very happy with their lives in the village confirming previous reports that, regardless of age-related changes or declines in health or income, many older people are able to maintain their subjective happiness and well-being in later life.[29] Interestingly, married individuals were less happy with their lives compared to non-married ones.

The overall psychopathology distress of the participants, as was reflected in the general symptom index

Table 4. Effect of socio-demographic factors on psychometric scales.

Factor/Scale	SOM	PSY	PHB	HPN
Age (AGE)	ns	ns	↓	ns
Gender (GND)	ns	ns	ns	ns
Obesity (OBS)	↑	ns	ns	↑
Overweight (OVW)	ns	ns	ns	ns
Educational Level Primary (EDP)	↓	ns	ns	ns
Educational Level Second (EDS)	ns	ns	ns	ns
Married Family Status (MRD)	↓	↓	↓	↓
Income less than 500 € (NC1)	↑	ns	↑	ns
Income 500–1000 € (NC2)	↑	ns	↑	ns
Social relations (SRL)	↓	↓	↓	↑
Smoking (SMK)	ns	↑	ns	ns
Alcohol consumption (ALK)	ns	ns	ns	↓
Body disease (BDD)	↑	↑	ns	ns
Medicine (MED)	ns	ns	ns	ns
Number of visits at Doctors (DOC)	ns	ns	↑	ns
Number of hospitalization (HSP)	↑	↑	↑	ns
Stress score (LSI)	ns	ns	ns	↓
Somatization (SOM)				↑
Phobic Anxiety (PHB)				ns
Psychoticism (PSY)				↓

ns: not significant, HPN=happiness, SOM=somatization, PSY=psychoticism, PHB=phobic anxiety

(GSI), was not significantly higher than the typical Greek population. However, this finding was not reflected in the symptom subscales, a subset of which (anxiety, hostility, and paranoid ideation) differentiated in the opposite direction while others such as obsessive-compulsive, interpersonal sensitivity, and depression did not differentiate from the typical population scores. This is a finding which is partly in concordance with earlier reports showing that older people have lower anxiety scores.[30] Furthermore, the participants had above normal (compared to typical Greek population) somatization score, but not significantly higher depression score. This result suggests that the mechanisms underlying the two aspects of psychopathology might be different in nature and potentially supplies a new perspective to previous research, which considers somatization as a presentation of masked depression.[31]

The close interconnection between the presence of psychopathology and physical health status[19,20,32] is confirmed in our study. However physical health status was not found to correlate with the level of happiness the participants experience by living in a village, contrary to previous references suggesting that poor physical health significantly correlates with subjective happiness and well-being.[33]

The positive correlation between social activity and psychological health, which is routinely reported,[34–36] is confirmed in our study as well. Indeed, our results showed that lower frequency of social activity was correlated with higher scores of somatization, phobic anxiety, and psychoticism. These findings confirm the fact that social support is a protective factor; having friends or someone to confide in and being sociable in the community reduce the risk of psychopathological symptoms in the elderly.[11–13,15,37–39] In addition, we found that married individuals had lower scores of somatization, phobic anxiety, and psychoticism. These observations corroborated similar findings showing that marriage

may offer protection against depression,[6,7,10–13,40] anxiety,[4,17,41] and paranoid symptoms.[38] The correlation between lower income and poor mental health ratings which has been previously reported[5,10–12,15,37,42] is affirmed in our study also.

Stressful life events were identified as a factor having a negative influence on happiness, confirming previous research.[43] In contrast, the presence of distressing life events was not identified as a factor influencing the presence/development of somatization, psychoticism, and phobic anxiety symptoms, a result that differentiates from previous results.[44,45] This finding could lead future research towards the specification of the exact nature of these underlying factors.

Our study has two main limitations: the cross-sectional design of the study, which introduces an uncertainty about accepting causal relations, since the data were collected at one point in time, and the assumed linear relation among variables in the path model. Other limitations include the small sample size, the non-randomized sampling method, and the too regional character of the sample, thus our results limited in terms of generability. However, the representativeness of our sample should be considered as good for this study in view of the specific nature of the examined rural villages, alongside the old age of the participants. Future studies should be performed on larger populations in specific areas before general conclusions can be drawn at national level.

Acknowledging these caveats, our results provide primary care practitioners with a better understanding of the factors affecting psychological well-being of older people residing in remote villages, which, in turn, could help facilitate targeted interventions better tailored to their socio-demographic and psychopathologic profile.

Ικανοποίηση για τη ζωή και η συσχέτισή της με την ψυχοπαθολογία ηλικιωμένων που διαμένουν σε απομακρυσμένες περιοχές της Κρήτης

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Ερευνητικές μελέτες έχουν δείξει ότι οι κοινωνικο-δημοσιογραφικοί παράγοντες και η ύπαρξη ψυχοπαθολογίας σχετίζονται με το επίπεδο ευτυχίας στην τρίτη ηλικία. Οι στόχοι της συγκεκριμένης συγχρονικής έρευνας ήταν: (1) να διερευνήσουμε το αποτέλεσμα της επίδρασης πρόσφατων στρεσογόνων γεγονότων ζωής και κοινωνικο-δημογραφικών παραγόντων στην ανάπτυξη ψυχοπαθολογίας σε ηλικιωμένους κατοίκους ορεινών και απομακρυσμένων περιοχών στην Κρήτη και (2) να διερευνήσουμε τον υποκείμενο μηχανισμό της σχέσης κοινωνικο-δημογραφικών παραγόντων και ψυχοπαθολογίας σε συνάρτηση με το επίπεδο ευτυχίας στην τρίτη ηλικία. Για την επίτευξη του στόχου αυτού χρησιμοποιήθηκαν οι εννέα διαστάσεις της ψυχοπαθολογίας με βάση την κλίμακα Symptom Checklist-90-R (SCL-90), ενώ η κλίμακα άγχους Holmes & Rahe χρησιμοποιήθηκε για την ποσοτικοποίηση των στρεσογόνων γεγονότων ζωής. Το δείγμα της παρούσας μελέτης αποτέλε-

σαν 205 ηλικιωμένοι άνδρες και γυναίκες (μέσος όρος ηλικίας: 77,1±6,7 χρόνια) που διαβιούν σε 10 ορεινά και απομακρυσμένα επαρχιακά χωριά στο νησί της Κρήτης. Η συλλογή των δεδομένων έγινε μέσω ερωτηματολογίων, που συμπληρώθηκαν σε ιδιαίτερες συναντήσεις με κάθε συμμετέχοντα ξεχωριστά, με τη βοήθεια του μελετητή που διενεργούσε τη συνέντευξη. Κάθε ερωτηματολόγιο περιείχε τις προαναφερθείσες κλίμακες καθώς και ερωτήσεις για ατομικά κοινωνικο-δημογραφικά χαρακτηριστικά των συμμετεχόντων. Η ανάλυση διακύμανσης χρησιμοποιήθηκε για την ανίχνευση κοινωνικο-δημογραφικών παραγόντων που εμφανίζουν στατιστικά σημαντική επίδραση στις διαστάσεις της ψυχοπαθολογίας. Στη συνέχεια, χρησιμοποιήθηκε ανάλυση διαδρομών για να ποσοτικοποιηθεί η έμμεση και άμεση επίδραση των επιλεγμένων κοινωνικο-δημογραφικών παραγόντων στην κλίμακα της ευτυχίας. Τα αποτελέσματα έδειξαν ότι τα στρεσογόνα γεγονότα ζωής δεν επηρεάζουν στατιστικά σημαντικά την ύπαρξη συγκεκριμένων συμπτωμάτων ψυχοπαθολογίας όπως η σωματοποίηση, ο ψυχωτισμός και το φοβικό άγχος. Ωστόσο, συγκεκριμένοι κοινωνικο-δημογραφικοί παράγοντες όπως η οικογενειακή κατάσταση, το κάπνισμα, το οικογενειακό εισόδημα, και οι κοινωνικές δραστηριότητες βρέθηκε να επηρεάζουν το επίπεδο ευτυχίας. Η συσχέτιση αυτή ποικίλλει ανάλογα με τον βαθμό ψυχο-συναισθηματικής έντασης. Τα αποτελέσματα αυτά υποδεικνύουν ότι η σωματοποίηση, ο ψυχωτισμός και το φοβικό άγχος είναι ψυχικές αντιδράσεις ανεξάρτητες από την προϋπαρξη πρόσφατων στρεσογόνων γεγονότων ζωής. Η μελέτη μας, παρόλο τον περιφερειακό της χαρακτήρα, μπορεί να συμβάλει στην ανάπτυξη κατάλληλων διαγνωστικών εργαλείων και παρεμβάσεων, βοηθώντας τους επαγγελματίες πρωτοβάθμιας περίθαλψης να προσεγγίσουν τους ηλικιωμένους κατοίκους απομακρυσμένων χωριών με ένα πιο κατάλληλο και ολοκληρωμένο τρόπο βελτιστοποιώντας έτσι την αποτελεσματικότητα των παρεμβάσεών τους.

Λέξεις ευρετηρίου: Ψυχική δυσφορία, στρεσογόνα γεγονότα ζωής, σωματοποίηση, ψυχωτισμός, φοβικό άγχος.

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