

# Environmental conditions, health and satisfaction among the elderly: Some empirical results

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Age has been used as the major determinant in the process of aging being the causal or explanatory variable of health, behavior and competence. Over recent decades, in several research context, there is growing emphasis on the idea that beyond and behind age (an other biological conditions), external or environmental factors account for variation in the way people become older. In this article, empirical results coming from several studies are presented showing the importance of environmental factors such as socio-recreational aids, community accessibility, expectation of functioning, tolerance, and social climate predict personal factors such as health, memory and depression complaints, activity, health and satisfaction among the elders living in residential settings. Also, socio-demographic factors such educational level and income are strongly associated with health (physical and mental health) and environmental quality seems to be related with life satisfaction in elders living in the community.

*Condiciones ambientales, salud y satisfacción en los mayores: algunos resultados empíricos.* La edad ha sido utilizada como el más importante determinante del proceso de envejecimiento, siendo, además, una variable causal o explicativa de la salud. En los últimos años, en distintos contextos de investigación, ha existido un creciente énfasis en la idea de que más allá y más atrás de la edad (y otras condiciones biológicas), factores externos o ambientales explican las variaciones en las formas de envejecer. En este artículo, se presentan resultados empíricos procedentes de distintos estudios que muestran la importancia de los factores ambientales tales como las ayudas socio-recreativas, la accesibilidad a la comunidad, las expectativas de funcionamiento, la tolerancia y el clima social, predicen factores personales tales como salud, quejas sobre la memoria y la depresión y la satisfacción entre los viejos que viven en residencias. Asimismo, factores sociodemográficos como la educación y la renta están fuertemente asociados a la salud (salud física y mental) y la calidad ambiental parece estar, también, relacionada con la satisfacción con la vida en personas mayores que viven en la comunidad.

Traditionally, age has been used as the major and only determinant in the process of aging; put another way, age is the causal or *explanatory* variable of health, behavior and competence throughout aging. Nevertheless, over recent decades, in several research contexts (social gerontology, human ecology, demography, urban studies, etc.) there is growing emphasis on the idea that beyond and behind age (and other biological conditions), social and environmental factors account for variation in the way people become older.

As Raphael pointed out «a body of research supports the distinction between normal, optimal, and pathological aging (Rowe & Kahn, 1997)). *Normal aging* is the more frequent process in any given society; *optimal aging* occurs under development-enhancing and age-friendly environmental conditions; *sick or pathological aging* is characterized by medical etiology and illness. These differences appear to result from contrasts in lifestyle, social support, socioeconomic status, and other environmental factors” (Raphael, 1996, p.291, underlining added).

Also, several national and international health organizations (WHO, 1990) have emphasized the importance of environmental conditions for normal, healthy, and pathological aging for enhancing life satisfaction and quality of life among the elderly. Several suggestions have been proposed in order to create positive environments and implement social programs, but much more research must be carried out to increase our knowledge about how and how much environmental factors influence personal variables. This article presents evidence supporting the importance of environmental variables in health and satisfaction on the elderly.

## Person/environment relationships models

As Kurt Lewin (1935) pointed out: there is nothing more practical than a good theory. Thus, before we introduce any empirical data about person/environment relationships we must discuss the most important theories, developed from psychological perspectives, that try to organize environmental variables and behavioral and/or psychological characteristics.

## *Ecological model of competence*

Based on Lewin's field theory of behavior — $B=f(P, E, P \times E)$ — human behavior should be explained by person and environment

conditions as well as by the interaction of these two types of variable. From Lewin's formula, Lawton (1975, 1982) developed the Ecological Model of Competence (EMC). Lewin's formula was adopted by Lawton, taking the person as competence and the environment as physical and perceived external demands. As Lawton pointed out «the term competence represents, to be sure, a limited aspect of all that might be included in the "P" component of the ecological equation» (Lawton, 1982, p.35). Competence is defined as the theoretically highest capacity limit of the individual in his/her health, sensation, perception, cognitive and motor functioning, and can be assessed in a continuum from high to low level.

Moreover, based on Murray's theory of environmental press (Murray, 1938), Lawton (1985) defined environment as the set of «stimulus or context (which) is seen as having potential demand character for any individual if empirical evidence exists to demonstrate its association with a particular behavioral outcome for any group of individual» (Lawton 1985, p. 39).

From the EMC model health and behavior can be predicted from the interaction between level of individual competence and degree of environmental demands. When the environmental demands are too strong for the subject's competence level, environment is a stressor for the individual and negative behavior can be predicted. But, if the environmental demands are very weak and the competence level very high, negative results can be derived because it can be predicted that competence could be extinguish by not practice. The most favorable environment combines the highest degree of pressure stimulating the subject's highest level of competence, and on the basis of the «docility hypothesis», the lower the level of competence, the greater the participation of environmental factors in accounting for behavior.

Although this model has produced an important body of research, as has been recognized by several authors, several problems make it difficult to test hypotheses arising from it. The most important flaw is the concept of competence, defined as a personal characteristic (either transactional or intrapersonal), as well as environmental press and adaptation level, are very poorly operationalized concepts (Carp, 1974). As has been accepted by Lawton, the ecology of aging is still emerging from a pre-scientific phase (Lawton, 1985, p. 57).

#### *Congruence models*

Several authors have been working on the hypothesis that individuals who have personality characteristics *corresponding to or congruent with* social and physical traits, adapt much better to a given milieu. As Gubrium (1972) pointed out «persons feel most satisfied with themselves and their living conditions when there is congruency between what is expected of them by others of significance and what they may expect of themselves» (p.283).

In general, the theoretical starting point for the authors supporting the congruent hypothesis is the same as Lewin's (1935) (B=P,E, PxE) and Murray's environmental press conceptualization as well as the assumption that aging means disadvantages, losses, handicaps, etc. Based on these assumptions about behavior and aging, it is hypothesized that «a close fit between environmental characteristics and individual preferences and needs should contribute to a sense of well-being» (Kahana, 1982, p. 99). Kahana stresses the importance of the model when both the individual and the environment have limitations. «Three factors may be expected to result in limitation of such options: 1) restrictiveness in envi-

ronmental characteristics, 2) limited degree of individual freedom, and 3) internal perception of limited degrees of freedom» (p. 100).

In sum, although the relevance of the congruence between the person and his/her environment is a logical assumption, authors have applied the congruence model mainly to handicapped elderly living in institutionalized conditions, and there is very little empirical support about the congruence model applied to elderly people living in the community.

#### *Socio-ecological model*

From the Laboratory of Social Ecology at Stanford University, Moos and Lemke (1984) have developed a model for explaining the relationships among environmental and personal factors and residents stability and change. This model is an attempt to organize individual and environmental variables with *practical* significance for elders living in residential settings.

Moos' model has five panels:

- \* Panel I, *Environmental system*, includes physical and architectural features, policy and functioning, aggregate characteristics of residents and personnel, and their interpersonal relationships.

- \* Panel II, *Personal system*, includes stable individual characteristics such as sociodemographics, health status, functional abilities, and self-esteem.

- \* Panels III and IV, *Cognitive appraisal and efforts at adaptation*, are individual characteristics mediators factor between the interactions person/environment conditions and behavior (cognitive, affective and motor in the context).

- \* Panel V, *Resident stability and change*, refers to individual characteristics such as satisfaction, well being, health, activity level, etc. This last Panel considers the dependent variables of the environment and the individual's stable pre-conditions (personal system) mediating the individual's cognitive appraisal and efforts of adaptation.

With regard to Panel I, the environmental system, Moos and Lemke have made enormous progress in operationalizing the environment through the development of the *Multiphasic Environmental Assessment Procedure (MEAP)* (Moos and Lemke, 1979, 1984, 1996). The MEAP is a set of measurement instruments constructed in order to take into consideration the environmental characteristics of residential settings for the elderly in an integrative and exhaustive fashion.

As is shown in Table 1, the MEAP has four main assessment domains: physical and architectural characteristics (9 dimensions), policy and program features (10 dimensions), suprapersonal conditions (9 dimensions), and social climate characteristics (7 dimensions). The MEAP Manual presents the psychometric properties of the instrument, as well as providing norms for several types of residential settings for the elderly and has been adapted to the Spanish culture (Fernández-Ballesteros, 1996).

#### *Behavioral-ecological model*

On the basis of Moos and Lemke's socio-ecological model, and chiefly on the MEAP, in an attempt to complement the MEAP with other personal-behavioral variables relevant in residential settings for the elderly, Fernández-Ballesteros (1986,1989) has developed a conceptual framework for proceeding to study environmental-personal relationships in such residential settings.

Table 1 Dimensions of the Multiphasic Environmental Assessment (MEAP)			
Physical and architectural features	Policy and program features	Suprapersonal factors	Social climate factors
<ul style="list-style-type: none"> <li>- Physical confort</li> <li>- Social-recreational aids</li> <li>- Prosthetic aids</li> <li>- Orientational aids</li> <li>- Safety features</li> <li>- Architectural choice</li> <li>- Space availability</li> <li>- Staff facilities</li> <li>- Community Accessibility</li> </ul>	<ul style="list-style-type: none"> <li>- Selectivity</li> <li>- Expectations for functioning</li> <li>- Tolerance for deviance</li> <li>- Policy choice</li> <li>- Policy clarity</li> <li>- Resident control provision for privacy</li> <li>- Availability of health services</li> <li>- Availability of daily living assistance</li> <li>- Availability of social-recreational activities</li> </ul>	<ul style="list-style-type: none"> <li>- Resident's social resources</li> <li>- Resident's heterogeneity</li> <li>- Resident's functional habilities</li> <li>- Resident's activity level</li> <li>- Resident's community integration</li> <li>- Staff background</li> <li>- Utilization or health services</li> <li>- Utilization of daily living assistance</li> <li>- Utilization of social-recreational activities</li> </ul>	<ul style="list-style-type: none"> <li>- Cohesion</li> <li>- Conflict</li> <li>- Independence</li> <li>- Self-exploration</li> <li>- Organization</li> <li>- Residents influence</li> <li>- Physical confort</li> </ul>
From Moos, & Lemke (1984)			

In Figure 1, the ecological-behavioral model is shown. This model begins by taking into consideration Staats' social-behaviorism theory (Staats, 1975; García Hurtado et al., 1995), which emphasizes the importance of the environmental conditions for the development of the Basic Behavioral Repertoires (BBRs) over the life span. In other words, environmental and personal conditions of a given subject at a given time are related to his/her past history. Environmental conditions at a given time, as at present, are affected by his/her BBRs learned in the transaction between the organism and his/her past circumstances. Finally, any kind of behavior (activity, functional ability, satisfaction, etc.) or health output could be explained by the interaction of the individual's personal conditions and the contextual or environmental circumstances (physical and architectural, organizational, sociodemographic aggregate, social climate, stressors, etc.).

Based on the MEAP and on this model, a system for assessing residential settings for the elderly, the *Sistema de Evaluación de Residencias de Ancianos (SERA)* (Fernández-Ballesteros, 1996), was developed. The SERA contains the adaptation of four domains of the *Multiphasic Environmental Assessment Procedure* (Moos and Lemke, 1979, 1984, 1996), and five new measurement devices for assessing other contextual variables (residential needs, residential satisfaction, interaction environment-behavior), as well

personal characteristics (sociodemographics, health, activity, functional abilities, etc.) considered relevant in facilities for the elderly. In the process of developing the SERA, the psychometric properties of all instruments included were studied, and the results support SERA's scientific guarantees (Fernández-Ballesteros, 1996, Izal, 1992). In the next section we present a summary of results from a recent work aimed at studying environmental and personal relationships in residential settings for the elderly.

Environmental and personal relationships in residential settings

After several studies concentrating on the standardization and psychometric properties of the SERA, we have tried to test potential relationships between environmental and personal factors (Fernández-Ballesteros, Montorio, Izal, 1998). In this study our main concern was to find the predictive value of all kinds of residential factors related to resident satisfaction, health, functional abilities and activity level. Let summarize this study.

Subjects

Thirty two residential settings for healthy elders and 1403 of their residents were assessed with the SERA. These 32 institutions

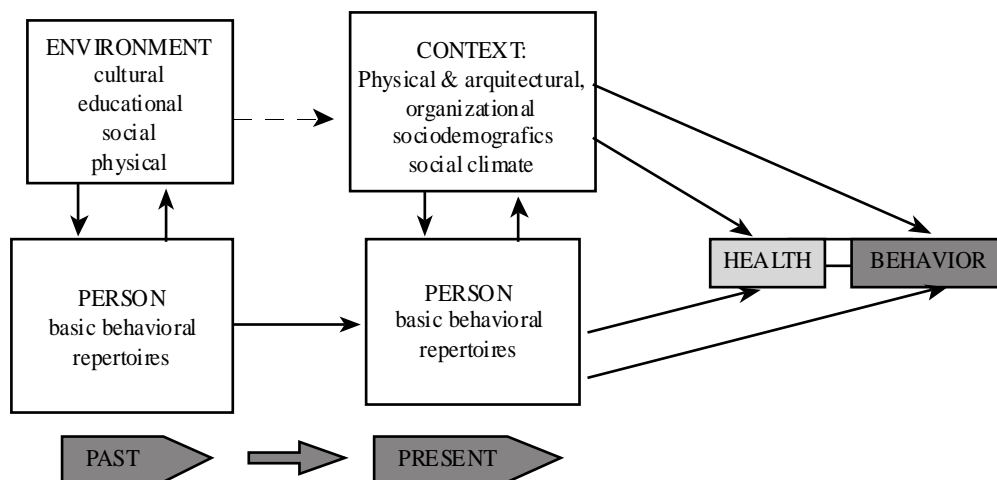


Figure 1. Behavioral-ecological model (From Fernández-Ballesteros, 1986)

were distributed all over Spain (in 12 regions) and, at the time of the study, were all dependent on the National Institute of Social Services (INSERSO).

1403 volunteer elders (mean age: 79 yr. old, range 65-98; 62.5% women) living in these facilities participated in our study (filling out the «Personal Information» questionnaire, as well as completing the Social Climate Scale). The sample corresponded to 32% of the total inhabitants of the 32 institutions assessed with the SERA.

#### *Variables, instruments and procedure*

Environmental and personal data were collected by means of the SERA. The environmental factors assessed were: physical and architectural features, organizational and functioning characteristics, social climate, and residential satisfaction. The personal factors assessed were: functional abilities, personal and community activity, and health.

Architectural and Physical Characteristics Scale has eight subscales: community accessibility (17 items), physical comfort (28 items), socio-recreational support (32 items), prosthetic aids (26 items), orientational support (8 items), Safety features (18 items), Staff facilities (8 items), and space availability (13 items). Alpha coefficients run from 0.84 (community accessibility) to 0.49 (staff facilities).

Organizational and Functioning Scale is composed by nine subscales: functional expectation (10 items), tolerance for deviance (15 items), resident control (15 items), organizational choice (21 items), policy clarity (10 items), provision for privacy (9 items), availability of health services (9 items), availability of daily living assistance (15 items), availability of social & recreational activities (12 items). Alpha coefficients run from 0.79 (tolerance for deviance) to 0.45 (policy clarity).

Social Climate Scale has seven subscales with nine items each: cohesion, conflict, independence, self-exploration, organization, residents' influence, physical comfort. Alpha coefficient run from 0.91 (conflict) to 0.74 (independence).

Finally, in the Personal Information Questionnaire can be found four subscales: functional abilities (4 items), personal activity (13 items), community activity (13 items) and health (9 items referring objective and subjective health and memory and depression complaints). Alpha coefficients run from 0.70 (activity) to health (0.57).

The SERA was administered by trained assessors. Data on residents' personal characteristics and from the Social Climate Scale were collected by means of self-administration or, where necessary (if subject was illiterate), through an interview.

On the basis of prior correlational analysis, several regression analyses (stepwise method) were conducted (SPSS/PC+).

#### *Results and discussion*

Table 2 shows the most significant results yielded by our analysis (Fernández-Ballesteros, Montorio and Izal, 1998). Let comment on the most important results.

Residents' degree of general activity is predicted by a personal variable, health, but also by two environmental variables such as socio-recreational aids and policy choice. Also, a personal variable, functional abilities, and an environmental characteristic, community accessibility, predicted activities in

the community. Functional abilities are related to objective health, but also to an environmental variable, policy choice. Perceived health is predicted by two environmental variables, cohesion (a social climate dimension) and expectation for functioning (an organizational characteristic). Memory and depression complaints are also predicted by personal variables (health), but also by environmental conditions: orientation aids in the case of memory complaints and tolerance in the case of depression. Finally, satisfaction is predicted by personal conditions (perceived and objective health), but also by three social climate variables: conflict, cohesion and physical comfort.

Figure 2 shows the relationship map derived from our results where personal and environmental variables are inter-related. First of all, as we can see, there are close relationships between several personal variables (health, functional abilities, activity level, complaints, etc.). Moreover, personal variables are influenced by environmental conditions, both physical and architectural, as well as by organizational characteristics. Physical circumstances, such as community accessibility, socio-recreational support, or orientation aids predict personal variables such as activity or memory complaints. These results are in accordance with the findings of other authors such as Moos and Lemke (1984), Lawton (1985) or Kahana (1982). Organizational characteristics such as organizational choice, resident control, functional expectation or tolerance are also related to personal variables. Nevertheless, it should be emphasized that, since these results come from regression analysis, we should not overestimate these relationships, and take environmental variables as a one-way influence. Social climate dimensions —as environmental factors— are predicting mainly personal factors, and are not linked to other environmental conditions. This result does not support Moos and Lemke's assumption that social climate characteristics are environmental conditions, therefore, strongly related to other environmental features (Moos and Lemke, 1979, 1984, 1996) but it supports the importance of assessing social climate dimensions as non-redundant information with regard to other environmental variables. In residential settings, social climate dimensions —such as conflict, perceived physical comfort and cohesion— are the most important predictors of satisfaction.

Finally, as has been pointed out by several authors, satisfaction (as the output of any social program or policy) is a complex personal variable, being predicted by diverse and numerous personal and environmental conditions. In this study satisfaction of the elderly is explained partially (19% of its variation) by personal characteristics, such as objective health, perceived health and complaints of depression, but also, to a greater degree, by social climate characteristics of the environment (36% of its variation). These results are consistent with findings from Carp (1987).

In summary, this study has been an attempt to explore the importance of the interaction of personal and environmental characteristics in predicting target variables —such as activity, functional abilities, health, etc.— and their influence on satisfaction among the elderly living in residential settings. Obviously, our work has been mainly descriptive; more explanatory-oriented research should be conducted in order to test our ecological-behavioral model.

*Table 2*  
Regression Analysis Coefficients (Fernández-Ballesteros et al, 1998)

Number Analysis	Dependent Variable	Independent Variable	R <sup>2</sup>	F	Sig	β	T	Sig
1	General Activity	Objective health	.81	28.9	.00	.69	6.79	.000
		Social-recreational aids				.53	5.87	.000
		Policy choice				.32	4.51	.009
2	Activities in the community	Functional abilities	.65	32.0	.00	.75	5.67	.000
		Community accessibility				.23	1.64	.046
3	Satisfaction	Conflict	.36	19.7	.00	-.55	-4.64	.000
		Cohesion				.48	2.72	.007
		Physical comfort				.43	2.32	.020
4	Satisfaction	Perceived health	.19	13.6	.00	.21	2.70	.008
		Objective health				.18	2.45	.015
		Depression complaints				-.14	-2.10	.021
5	Functional abilities	Objective health	.55	10.3	.00	.45	2.85	.027
		Policy choice				.37	2.31	.030
6	Perceived Health	Cohesion	.49	7.4	.00	.51	2.86	.010
		Expectations for functioning				.47	2.67	.013
7	Complaints about memory	Complaints of depression	.87	36.1	.00	.66	6.74	.000
		Orientalional Aids				-.33	-3.75	.001
		Objective health				-.31	-3.21	.005
8	Depression	Perceived health	.40	6.2	.00	-.67	-3.3	.003
		Tolerance				.45	2.2	.035
9	Independence	Residents' control	.30	13.1	.00	.55	3.6	.001

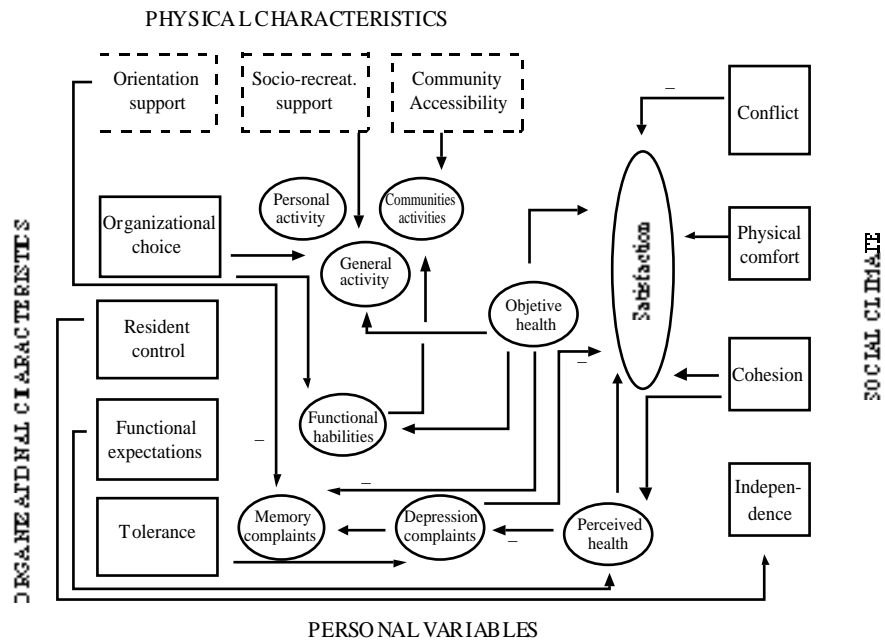


Figure 2. An empirical model on environment-person interactions (From Fernández-Ballesteros et al., 1998)

## Environmental factors and quality of life

*Quality of Life in the elderly*

Quality of Life (QoL), like life itself, is an extremely complex and multidimensional concept with a high impact in research and practice. Table 3 shows the multicontextuality and growth of QoL through citations in urban, biological, medical, psychological and social data-based literature (see for a review, Fernández-Ballesteros, 1998). For example, in 1969 there is 0 citation in Urban<sup>2</sup>, 1 in Biosis, 1 in Medline, 3 in PsychLIT, and 2 in Sociofile; in 1995 we can find, respectively, 112, 139, 2242, 187 and 127. From these cumulative frequencies we can conclude that there has been a constant increase of interest in QoL but while on the field of biomedical sciences the progression has been almost exponential on the field of social and behavioral sciences there has been a relatively small growth.

	URBAN	BIOSIS	MEDLINE	PsycLIT	SOCIOFILE
1969	0	1	1	3	2
1955	112	1379	2242	187	127
1967-1974	–	20	61	62	109
1975-1979	14	160	1051	162	346
1980-1984	33	394	1695	404	507
1985-1989	200	1575	3685	877	640
1990-1995	593	5821	10641	1583	881

Although there is no consensus on an empirical definition of QoL (Birren and Diekmann, 1991, Lawton, 1991), authors agree that it is a multidimensional concept. For example, Lawton (1991) proposed a four-sector model in which psychological well-being, perceived quality of life, behavioral competence and objective environment are the four general evaluative sectors of QoL. The World Health Organization (1993) has conceptualized it in terms of five broad domains: physical health, psychological health, level of independence, social relationships and environment. Hughes (1990) defines seven categories: individual characteristics, physical environmental factors, socio-environmental factors, socio-economic factors, personal autonomy factors and personality factors. Finally, Flanagan (1978) suggested five main QoL categories: physical and material well-being, relationships with other people, social community and civic activities, personal development and fulfillment, and recreation.

Taking into consideration these and other conceptualizations, but with the aim of arriving at a much more empirical concept of QoL, we tried to identify the «popular» concept of QoL in the elderly (Fernández-Ballesteros 1993; Fernández-Ballesteros & Macía, 1993). Health status, functional abilities, financial resources, family and social relationships, daily-living and recreational activities, social and health services, life satisfaction, cultural resources and environmental quality are (in that order) components of QoL for the elderly.

In this «pop» conceptualization, no differences were found across gender, age, and socio-economic status (in a representative sample of the Spanish population, N=1.200). Moreover, when all these components were assessed in several samples of the Spanish

elderly population and factorial analyses were carried out, a factorial structure close to these QoL ingredients emerged.

In sum, for the majority of authors, QoL components include both external or ecological factors (SES factors, environmental conditions, etc.) and intraindividual or personal factors (perceived health, life satisfaction, etc.). Figure 3 shows Fernández-Ballesteros' model (Fernández-Ballesteros, 1993, 1998). This «two stars model» represents QoL as concerning both personal (health, functional abilities, social interactions, leisure and activity and life satisfaction) and socio-environmental characteristics (financial conditions, cultural factors, social support, environmental quality, and health and social services), showing the assumption that personal components of QoL are supported by socio-environmental, external or ecological conditions.

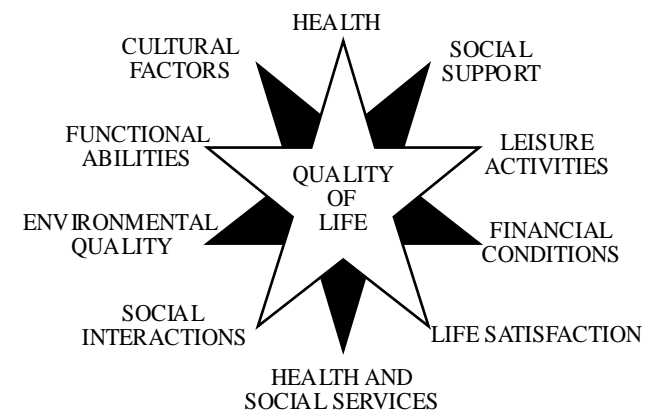


Figure 3. Quality of Life multidimensionality: Personal and Socio-environmental factors (From Fernández-Ballesteros, 1993)

After this conceptualization, several studies on QoL in the elderly have been conducted (for a review see Fernández-Ballesteros, Zamarrón and Macía, 1996) that validate this multidimensional concept of QoL. Let us now summarize the importance of socio-environmental factors in two of the most important components of quality of life: health and life satisfaction.

#### Socio-environmental factors of quality of life, health and satisfaction

##### *Participants*

1013 subjects over 65 ( 508 community-dwelling, Mean age: 76.87 years old, 210 men and 297 women and 505 living in public and private residential settings, Mean age: 74.64 years old, 204 men and 300 women) participated in this study. It can be considered as a representative sample —by age, sex and rural/urban conditions— of the Spanish population over 65, sample error =+3%). Participants living at home were recruited by a route random selection system from all over Spain. Also, 501 subjects (Men=204, Women=303) from residential settings (public and private residences) for healthy people selected were selected at random from the general Spanish Residences for the Elderly list.

##### *Variables, Instruments and Procedure*

Subjects were assessed through an interview (administered at home by trained interviewers) containing questions about the fo-

llowing personal and socio-environmental conditions of quality of life:

*Personal domains:* health (mental status, perceived health, mental health, medication, chronic diseases, pains), functional abilities, daily life activities and leisure, social relationships satisfaction, and life satisfaction.

*Socio-environmental domains:* social relationships frequency, financial situation, educational level, environmental quality (perceived and observed by the trained interviewer), and social and health services.

On the basis of descriptive and correlation analysis, a series of ANOVAs were conducted (SPSS/Windows).

*Results and discussion*

Table 4 shows the influence of education on health. Illiterates, people who did not complete a period of compulsory education yielded significant lower scores than high school and university participants regarding their mental status, perceived health, mental health, chronic health problems, pains, and medicine consumption. This is a good example of how the historical environment (see Figure 1) can have enormous influence on health and behavior. In Spain, older cohorts were born and grew up in a historical period where there was no mandatory education; this circumstance seems to exert influence not only on professional opportunities and career over life, but even on all health parameters in old age (see Fernández-Ballesteros, Zamarrón & Maciá, 1996).

		Income				F	Sign.
		TOTAL	< 45.000	45-75000	> 75.000		
<b>Mental Status</b>	N	852	168	400	284		
	M	8,6	8,3	8,6	8,9	9,06	P<.000
<b>Subjective Health</b>	N	575	103	281	191		
	M	2,08	2	2,08	2,1	2,81	p<.06
<b>Mental Health</b>	N	809	157	383	269		
	M	1,8	1,7	1,8	1,7	2,53	p<.07
<b>Chronical Problems</b>	N	803	158	374	271		
	M	1,65	1,69	1,65	1,61	1,5	p<.22
<b>Pains</b>	N	792	158	367	267		
	M	1,54	1,58	1,55	1,5	2,12	p<.11
<b>Medicine intake</b>	N	812	159	378	275		
	M	1,81	1,8	1,81	1,82	0,66	p<.49

As it is well known, education (and other cultural factors) is related to the financial situation of a given subject. Even though, it

can thus be assumed that the influence of education on health is through subjects' income. This assumption has been tested by Rowe & Kahn, (1997) who recently highlighted that, in the USA, the best predictor of health is income. Nevertheless, this assumption is only partially supported by our data from the Spanish elders. As it can be seen in Table 5, subjects with higher levels of income have a clearly better mental status; this is a very wellknown effect of the Socio-Economic-Status on intellectual decline or even impairment of cognitive functioning. But, from our results no significant differences were obtained in any other health indicators. As a post-hoc assumption, it may be that an environmental condition —the universal health protection system (as is the Spanish Public Health System) — leads to equality of outcome in terms of health of all subjects whatever their income is.

		TOTAL	Level of Education				F	Sign.
			Low	Average	High	College		
<b>Mental Status</b>	N	1013	86	564	323	40		
	M	8,6	7,1	8,4	9,1	9,6	60,25	P<.000
<b>Subjective Health</b> (+data better S.H.)	N	677	58	375	220	24		
	M	2,09	1,86	2,04	2,2	2,3	9,06	p<.000
<b>Mental Health</b> (+data worse M.H)	N	962	81	535	306	40		
	M	1,79	1,88	1,86	1,67	1,47	10,1	p<.000
<b>Chronical Problems</b>	N	955	82	523	310	40		
	M	1,65	1,76	1,68	1,59	1,5	5,49	p<.001
<b>Pains</b>	N	942	78	519	308	37		
	M	1,54	1,67	1,58	1,46	1,37	10,37	p<.000
<b>Medicine intake</b>	N	962	81	528	313			
	M	1,81	1,7	1,8	1,82	1,84	3,3	p<.01

low = Illiterate  
Average = Mandatory  
High= High School  
College= University

With respect to our final socio-environmental quality of life condition, that is, environmental quality, before commenting on our results, we should examine the relationship yielded by the two methods used: self-report and by observation. In other words, we should examine the relationships between subjective and objective indicators of environmental quality. As we can see in Table 6, our four indicators of environmental quality significantly correlate; but, also, on base of the shared variance it cannot stated that «objective» and «subjective» environmental characteristics are interchangeable. Therefore, environmental quality observed by our interviewers correlates in the expected direction with self-reported

indicators such as «need for repairs», «neighborhood quality» and perceived «environmental quality». These results give us the opportunity to pointed out the importance of triangulating our environmental research data, administering objective as well as subjective procedures in assessing a given variable.

Table 7 shows relationships between environmental quality, health and life satisfaction. People well-satisfied with the quality of

their environment, significantly, report having fewer pains, as well as report to be satisfy in life than those not very with their environment. Thus, environmental quality contributes to subject's life satisfaction, but scarcely to health. Only pain complaints, a quite subjective health condition, seems to be related to perceived environment.

In summary, although education is the most important condition in predicting health, other circumstances external to the sub-

*Table 6*  
Relationships between objective and subjective enviromental factors

			Enviromental Quality (Objective)		Need of Repairs		Neighbourhood Quality		Enviromental Quality (Subjective)
Enviromental Quality (Objective)	r	n	1013		-0,33	969	0,39	1009	0,29
	p			***			***		***
Need of Repairs	r	n	-0,33	969		970	-0,18	968	-0,36
	p		***		***		***		***
Neighbourhood Quality	r	n	0,39	1009		-0,17		1010	0,28
	p		***		***			***	
Enviromental Quality (subjective)	r	n	0,29	1009		-0,36		0,28	
	p		***		***		***		

\*\*\* p<.001  
r= Pearson correlation  
n=Number of subjects

*Table 7*  
Relationships between environmental satisfaction, health and life satisfaction

		Environment Satisfaction			
		Very Much	Very Few	F	Sign.
Mental health	N	679	317		
	Ds	.14	.15		
	M	.87	.84	3,5	ns
Subjective Health	N	454	215		
	Ds	.53	.52		
	M	2,14	1,98	0,007	ns
Chronic Problems	N	642	297		
	Ds	.44	.50		
	M	1,62	1,72	3,5	ns
Pains	N	634	296		
	Ds	.36	.48		
	M	1,5	1,6	19,24	p<.000
Medicines	N	646	301		
	Ds	.15	.16		
	M	1,82	1,79	3,08	ns
Life Satisfaction	N	675	315		
	Ds	.80	.86		
	M	2,84	2,62	12,6	p<.000

N = Number of Subjects  
M= Mean  
SD= Standar Deviation



ject, such as financial situation, and environmental quality are also important factors for mental health, pains and personal (or subjective) satisfaction.

#### Summary and conclusions

This paper has dealt with the influence of environmental conditions on the elderly health and satisfaction. First of all, several theoretical models attempting to organize environmental and personal circumstances in old age were presented both from a general perspective and linking them to quality of life.

Also, in order to test some of the assumptions arising from the socio-ecological and behavioral-ecological models, empirical data has been presented emphasizing the importance of the interaction among environmental and personal factors predicting health and satisfaction in residential setting for the elderly.

Physical and architectural variables (such as socio-recreational aids and community accessibility), organizational characteristics (such as expectation of functioning or tolerance), social climate dimensions (such as cohesion, conflict or physical comfort) alone or in interaction with the personal basic behavioral repertoires predict health and satisfaction in residential settings. Both health and satisfaction (as the output of any social program or policy) are complex personal variables predicted by diverse and numerous other personal but, also, environmental conditions. In this study satisfaction of the elderly is explained partially by personal characteristics, such as objective health, perceived health and complaints of depression, but also, to the greatest extent, by social climate characteristics of the environment.

The concept of quality of life in old age has been reviewed, and a model has been presented in order to take into account both per-

sonal and socio-environmental ingredients of quality of life. In this model, socio-environmental factors (such as cultural and financial condition, social interactions, support services or environmental quality) are understood as supporting personal conditions (such as health, social satisfaction, leisure activities or life satisfaction). Data about the influence of socio-environmental factors of quality of life on health and satisfaction have been presented and discussed. In our data, a past environmental factor, educational background, is the best predictor of health. This result supports the notion (presented in our ecological-behavioral model, see Figure 1) of the importance of past environmental factors on aging.

Moreover, subjects with higher levels of income have a clearly better mental status than low income subjects; socio-economic condition have a strong influence in cognitive functioning in old age. But, our data does not support the view that financial condition predicts physical or subjective health; it can be assumed that, likely, when health and social services are available for all the population, financial conditions have no explanatory role in health. Education (schooling) is significantly associated with health; it can be concluded that this environmental past factor predict health in old age. Finally, perceived environmental quality appear to have a modest influence on health (reported pain) and satisfaction in the elderly.

#### Foot notes

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- 2 Urban includes the following data base: Urbamet, Urbaline, Genie Urbain, Docet, Bibliodata, Docet, and Acompline).

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