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INDICATING SOCIOECONOMIC STATUS AMONG ELDERLY PEOPLE IN DEVELOPING SOCIETIES: AN EXAMPLE FROM BRAZIL★

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ABSTRACT. This paper is concerned with how to indicate Socioeconomic status (SES) among elderly people with census or survey data from less developed societies. It reports findings from a study of independent living among elderly people 65 years and over in Brazil in 1980 and 1995 that uncommonly had comparable data on education, income *and* housing attributes. It found that the potential indicators of SES are not substitutable. Rather, although they tend to be positively related to each other, each can have a different relationship with independent living, one being positively related even as another has no relation and a third has a negative relation. I recommend that the indicators *not* be combined into one measure, and that if only one is used, that choice *not* be called 'Socioeconomic status' but rather precisely what it is (e.g. education). [One}… stance involves a measurement-by-fiat approach through which the investigator selects whatever remotely connected indicators he or she can locate and then merely announces that these will serve as measures [or proxies] of some highly abstract theoretical construct. The presumed rationale is that since the concept is difficult to measure, almost any indicators will do. (Blalock, 1982, p. 19). However, insofar as different perspectives lead to conflicting conclusions concerning the 'same' issue, the sensitivity of findings to (…) measurement (…) is clearly a matter of concern. (World Bank, n.fd.)

INTRODUCTION

This note is concerned with the fundamental empirical issue of how to indicate the Socioeconomic status (SES) of elderly people with census or survey data from less developed societies. As a sociologist, I must emphasize the *social* part SES, and as a Weberian, I must emphasize the word *status*: In contrast to the purely economically determined 'class situation' we wish to designate as 'status situation'

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every typical component of the life fate of men that is determined by a specific, positive or negative, social estimation of *honor*. … Property as such is not always recognized as a status qualification, but in the long run it is, and with extraordinary regularity (Weber, 1970). The fact that the choices of how to indicate SES in many less developed societies are sparse indeed does not excuse the flippant manner in which some researchers seem to toss around the word, as if any indicator will do, will carry the same message as any other.

In more developed countries, for people of all ages, sociologists now tend to use information on education, occupation, income, assets or some combination of education, occupation and income to indicate SES, sometimes manipulating the information with rather sophisticated statistical techniques (e.g. Nakao and Treas, 1994; Hauser and Warren, 1997). It can be forgot however, that the indicators were initially the product of a focus on middle-aged white male household heads in a distinct historical and cultural setting, and that this product cannot simply be transferred to the study of elderly populations of men and women in other historical and cultural settings. Indeed, there have been attempts to extend SES or 'occupational prestige' scales or indices to include women, and/or to make them international (e.g. Treiman, 1977; Nam and Powers, 1983; Ganzeboom et al., 1992) but that generally has been most successful in ''Euro-American urban'' settings (Haller and Bills, 1979) among young-to-middle aged people.

The remainder of this introduction is a brief review of different possible indicators of SES, including one of 'housing quality,' a concept that had some attraction among sociologists in the United States at one time. Then, the paper will shift to an empirical study of the situation among elderly people in Brazil using microdata from the census of 1980 and a national household survey (PNAD) of 1995. The focus of the empirical study is on how the different indicators relate to the independent living of elderly people because independent living was the focus of the project from which this specific piece stems (e.g. De Vos and Andrade, 2003). In that study, we were faced with the need to assess the impact of SES on living arrangements among elderly people but found little guidance in the literature on how to do that for elderly people in a developing society. We also discovered that compared with other data sets that may contain one or two of the indi-

cators, the Brazilian data sets were rich, containing information on education, income *and* household amenities, information that is fairly good for unmarried people of both sexes and for married men (income information tends *not* to be good for married women). There was need for a systematic appraisal of how well the different possible indicators could in fact be in tapping into the sociological concept of SES.

Development of Socioeconomic Scales

In early days of empirical inquiry into social stratification in the United States, sociologists suggested a variety of scales that included information on education, income, occupation and the possession of various consumer durables. A good example is Francis S. Chapin's Social Status Scale that included information on his Living Room Scale (Chapin, 1933; see also Hagood and Ducoff, 1944; Hatt, 1950; Laumann and House, 1970). Although the possession of various household items continued to be considered important, occupation was a straightforward datum that could be gathered by social surveys and that could be easily placed on such vital records as birth and death certificates. Occupation was rather stable, an attribute of urban as well as rural society, and helped predict income and educational attainment, especially among young White males who constituted a majority of household heads. It made sense therefore to develop a SES index primarily using information on occupation informed by information on education and income (see e.g. Duncan, 1961a, b). Housing information was *not* included.

Occupation is *not* a good indicator for elderly populations however. First, many elders are retired and have no occupation. Second, many are bereaved, making it awkward to assign a status based on an attribute of a spouse who is no longer alive. This leaves us to consider anew education and income, and to reconsider the use of a housing quality scale. All three are potential but different indicators of SES among elderly people (see Martelin, 1994). Education is a *social* characteristic that can be indicative for both men and women but it also can be more reflective of the past than the present. Income may be more informative of the *present*, but is often *never* very informative for women, and may fluctuate significantly from year to year for men. More stable and indicative of the *present* situation for both men and

women are housing attributes, but as household-level attributes, they ideally need adjusting for household size and composition, and, more importantly, may not be comparative across time or space.

Part of a reconsideration of education, income and household-level attributes is whether they are best combined to help indicate one underlying concept such as SES or whether they are best considered separately. It seems relevant in this respect that Martelin (1994; see also 1998) considered them separately, ultimately deciding to focus on education, while Bollen et al. (2002) consider them in terms of helping to estimate an underlying latent variable 'permanent income.' Perhaps this is a good instance for arguing that whether combining or separating possible indicators can depend on the subject being studied, but we shall show an instance in which it is preferable to keep them separate.

Education

Education in Brazil, similar to the rest of Latin America, is a telling indicator of social status among adults of either gender. Although a major component of many socioeconomic (SES) scales, educational attainment is sometimes used as an SES indicator by itself. In many Latin American censuses in fact, educational attainment has often been the best indicator available as information on income is often non-existent or of poor quality while information on occupation refers mainly to people in a *formal* urban economy (see Portes and Hoffman, 2003).

Even when studying fertility from an economic standpoint, Montgomery et al. are compelled to write (2000, p. 155): *Education is linked closely to income; it is also thought to have a separable and distinctive influence on decision making. Schooling can stimulate the development of cognitive abilities and heighten attention to information (citation); it can shift the distribution of authority within the household and equip individuals with the social confidence to claim resources outside the household (citation); and it can impart specific information that is pertinent to demographic decisions (citation).* And after considering a number of different characteristics, they found the most important predictor of demographic behavior to be women's education, that education *makes a decisive contribution in affecting women's cognitive abilities, attention to and receipt of information, social*

confidence, and autonomy in decision making (2000, p. 170). Such words make a sociologist beam.

However, many pieces on SES simply do not discuss education. There is no prestige index based on education the way there is for occupation, and there is no standard way to characterize education the way the International Labor Organization (ILO) has tried to standardize occupation. Some researchers simply use literacy while other researchers use years of education. But literacy is often an insufficient criterion by which to differentiate people while years of education after a basic education, may well depend on how the education will be used. Consequently, some researchers including myself, use education level, in which being illiterate or having no education is only one category of several. Furthermore, 'basic' education can be 3, 5 or even 8 years while higher education may be oriented toward a certain vocation, certificate, or even more education. What is more important for comparative purposes, a level/certificate or years of education?

Income

Someone's income can be an important indicator of SES because it helps indicate one's relative ability to control resources. Actually, economists may prefer the concept of 'consumption' to income, as consumption may better indicate a long-term perspective (Fields, 1994; see also Clark, 1989). Income can come from multiple sources, vary considerably from year to year, and if it is meant for an entire household, can depend on household size and composition. Chan et al. (2002) emphasize that elderly people may receive unreported income from others, especially co-resident children, in addition to whatever income they themselves receive. Unfortunately, information on income in less developed societies is often lacking or of such poor quality as to be useless. The related variable of poverty is sometimes used to denote some absolute threshold, but the actual measurement may be based on the cost of a basket of groceries, as if that is supposed to help indicate the cost of all basic living expenses, including healthy housing.

Maybe some of the preference for 'consumption' instead of 'income' could be transferred to a preference for the concept of 'per-

manent income' since permanent income would not vary from year to year. However, Bollen et al. (2002) acknowledge the difficulty of actually indicating this concept and end up suggesting that it may best be considered a latent variable partly estimated with information on education, occupation and household characteristics. This seems to bring us back to the early days of attempted measurement of SES, although importantly, household items are considered worth assessing.

Housing Quality

Instead of looking at poverty using information on the cost of a basket of groceries, one can indicate SES with various housing items, perhaps putting them together into a scale of 'living standards' (e.g. Ayad et al., 1997; see also Zimmer and Amornsiriisomboon, 2001). Like more conventional poverty indicators, a housing scale has the advantage that it can be used to study children, older people and/or women as well as middle-aged male household heads, even if they do not have an occupation or income of their own. The United Nations has, for a long time, recommended that the housing part of a regular census collect information on such aspects of a living quarters and household as the material of the external walls, type of sewage system and the ownership of a television (e.g. 1980 and again in 1998, pp. 97–98).[1] As time has gone by, the list of items has changed while some items have become a 'basic' attribute or amenity rather than one only associated with the better-off, making it difficult to develop a standardized scale of housing quality or level of living that can be used across time or space (Baer, 1976; see also Arias and De Vos, 1996).

In the United States, concern over the quality of the housing stock motivated attempts at measuring housing quality in the U.S. Census (e.g. U.S. Census, 1967). In the 1950 and 1960 censuses, enumerators rated structures as ''dilapidated/not dilapidated'' (1950) or ''dilapidated/deteriorating/sound'' (1960) but the reliability of such assessment was considered low. Further doubt was expressed over the usefulness of resident assessments, although the Census has had to rely on self-reports beginning with the 1970 Census. Then there was

the sense that the standard by which housing quality was rated kept changing (e.g. Baer, 1976). Finally, it was determined that that there were too many different dimensions to the concept of "housing quality" for it to be reducible to one variable (Goedart and Goodman, 1977; Goodman, 1978). The various factors that in combination could be assessed by rent could reflect a neighborhood's reputation, safety or proximity to other amenities, and demand and supply, more than it might reflect a unit's material qualities (e.g. existence of quality plumbing, room space, good building material etc.; see Sumka, 1977). In the end, analysts concerned with the housing situation of elderly people in the United States now use data other than the Census (e.g. Golant and La Greca, 1995; Markham and Gilderbloom, 1998).

Has the United States experience led analysts of the situation elsewhere to reject the idea that material housing characteristics and the presence of certain household amenities could help indicate SES? No. Montgomery et al. (2000) used Standard of Living Index items (such as water source and toilet/sewage facilities) for Ghana (1987–1989), Jamaica (1989), Guatemala (1995), Pakistan (1991), Peru (1994), and Tanzania (1993–1994) to study fertility, child mortality and children's schooling. Housing attributes have also been found useful for studies in Bangladesh (Karim, 1990), Ghana (Fladzo et al., 2001), Uganda (Cortinovis et al., 1993), Colombia (De Vos and Arias, 1998), Panama and Argentina (De Vos, 2001) and India (Filmer and Pritchett, 2001). In fact, Filmer and Pritchett found their use of household data so informative that they applied their method to studying child education around the world (1999). Perhaps most noteworthy of all is an ongoing comparative analysis of Demographic and Health survey data using household information from many developing countries to study the SES of individuals in both urban and rural households (see Ayad et al., 1997 for an early report).

What was the Brazilian experience? In studying independent living among elderly Brazilians, there was little precedence to guide us in our interest in indicating SES among elderly people in a developing country with census or survey data. Consequently, I figured that the study reported below could be of value to other researchers.

THE STUDY

Data and Method

This study uses data on Brazilians 65+ from microfiles of the 1980 Brazilian census and Brazil's 1995 national household survey PNAD (*Pesquisa Nacional por Amostra de Domicílios*; see De Vos and Andrade, 2003). We focus on the 36,463 and 17,802 national samples of people in private households who had an identifiable racial/color category of "White," "Black," or "Brown" (almost all). These samples are broken up into four groups in each year: unmarried men, married men, unmarried women, and married women. Attempts at aggregating the four by, for instance, ignoring marital status, proved obfuscating. The variables are just too different among the different subgroups.

We assess various indicators of SES (education, income, a housing scale) by using the 'simple' technique of correlation analysis in which we use Spearman's correlation because the variables are ordinal, not interval. Although we estimate correlations for the entire elderly populations in 1980 and 1995, our observations for those populations are not independent and we cannot assess a statistical significance. We *can* assess statistical significance for each subgroup however. We assume that the correlations have Asymptotic Standard Errors with a Chi Squared distribution (very similar to the normal distribution in large samples).

The variables in our study include three SES indicators – education, income, and a housing scale, two demographic ones – sex and marital status, and independent living. While education, income, the housing scale and marital status are described more below, we should just mention here that sex is self-explanatory, and independent living is living alone if unmarried or living only with a spouse (or companion) if married or in a union.

Education

Since both literacy and a basic education are fundamental among people who generally have not had a lot of education, we measured education with three categories in which an answer on literacy took

precedence over years of formal education: 1 = no years/illiterate, 2 = basic (literate and 1–4 years of formal school) and 3 = more than basic (literate and 5 + years of school). The percentile educational attainment distribution of elderly people overall and by marital/sex subgroup in 1980 and 1995 is shown in Table I. Three points are that (1) the overall level of educational attainment increased between the two times but that (2) women had less educational attainment than elderly men at both times, and (3) married people tended to have more education than unmarried counterparts. For instance, overall the percent illiterate was 56.2% in 1980 compared with 42.2% in 1995. In 1980 this was 49.7% among men compared with 62.0% among women while in 1995 this was 38.2% among men compared with 45.4% among women. Finally, among men in 1995, 36% of married men were illiterate compared with 45% of the unmarried men.

Income

The 1980 census listed monthly income from seven different sources: (1) a first job, (2) a second job, (3) a third job, (4) retirement or pensions, (5) physical assets, (6) transfers between persons, and (7) financial assets. This was combined into one variable denoting total average monthly income. The 1995 survey itself summed up all the different kinds of monthly income into a ''total income'' variable. Since we compared the effect of income in 1980 and 1995, we converted the 1980 unit (the *Cruzeiro*) into the 1995 *Real* by a factor of 0.039275, based on an analysis of economic time-trend information. The resulting variable was still very large, ranging from 0 to over 30,000 units per *month*.

Income was converted into a categorical variable after considering it in its raw form and as its natural log. The categorical variable reflects the high proportion of people, especially married women, who have no income at all while also taking advantage of income's logarithmic quality. One can see from the figures in Table I that at one extreme, there is a noticeable proportion of the samples without any income. On the other end, an even lower proportion of the general population has an income of 600 or more *Reais* a month. The three categories in between the two extremes were demarcated with the 1988 Constitutional minimum wage benefit of 100 *Reais* in mind.

TABLE I

Percentile distributions of education, income, the housing scale and independent living among people 65+ years of age, Brazil in 1980 and 1995

	Tot 1980	1980 (n = 36,691)						Tot 1995	1995 (n = 17,608)					
		Men (n = 16,644)			Women (n = 19,237)				Men (n = 7661)			Women (n = 9947)		
		Total	Unm	Mar	Total	Unm	Mar		Total	Unm	Mar	Total	Unm	Mar
Education														
None	56.2	49.7	56.7	47.4	62.0	62.7	60.4	42.2	38.2	45.0	36.0	45.4	47.6	41.1
Basic	35.9	41.6	36.3	43.3	30.8	29.9	32.4	41.7	44.8	42.1	45.6	39.3	37.3	43.2
More	08.0	08.7	07.0	09.3	07.3	07.4	07.1	16.1	17.1	12.9	18.4	15.3	15.1	15.7
Monthly income														
None	20.0	03.0	05.8	02.1	35.1	16.1	72.9	10.7	02.0	03.7	01.5	17.6	06.3	38.7
1–99 Reais	40.2	37.6	49.0	34.0	42.5	54.8	17.9	02.1	01.8	02.3	01.6	02.4	02.1	03.1
100–199 Reais	17.8	25.1	23.0	25.7	11.4	14.5	05.2	55.1	51.0	61.8	47.7	58.3	63.1	49.5
200–599 Reais	13.7	20.6	15.6	22.3	07.5	10.0	02.6	21.3	28.7	23.1	30.4	15.5	20.6	06.0
600+ Reais	08.3	13.7	06.6	15.9	03.5	04.5	01.4	10.7	16.5	09.0	18.8	06.1	07.9	02.7

Housing scale														
0	10.0	10.9	12.8	10.4	09.2	08.7	10.2	01.8	02.0	03.3	01.6	01.7	01.7	01.6
1	14.7	16.4	18.9	15.6	13.3	12.2	15.5	04.8	05.6	07.5	05.0	04.2	03.7	05.0
2	09.1	09.7	10.5	09.5	08.5	08.2	09.1	03.8	04.3	05.7	03.9	03.4	03.2	03.8
3	06.5	06.8	06.6	06.8	06.2	06.0	06.6	04.0	04.3	05.1	04.1	03.7	03.6	03.9
4	05.5	05.2	05.0	05.3	05.8	05.7	05.8	04.3	04.6	06.5	04.0	04.1	04.1	04.0
5	05.8	05.8	05.5	05.9	05.9	06.0	05.6	05.4	06.0	07.3	05.6	05.0	04.9	05.0
6	07.3	07.2	07.3	07.1	07.5	07.8	06.7	08.5	08.5	08.0	08.7	08.5	08.4	08.5
7	11.4	10.8	10.6	10.9	11.9	12.3	11.1	16.6	17.1	16.7	17.3	16.2	16.4	16.0
8	29.5	27.1	22.8	28.4	31.7	32.9	29.4	50.7	47.5	40.0	49.8	53.3	53.9	52.2
Independent living														
0 (no)	73.2	70.8	71.2	70.7	75.4	81.8	62.5	67.4	65.0	65.2	65.0	69.2	75.8	56.8
1 (yes)	26.8	29.2	28.8	29.3	24.6	18.2	37.5	32.6	35.0	34.8	35.0	30.8	24.2	43.2
Sample (percents)	100.0		11.5	36.0		34.8	17.6	100.0		10.3	33.2		37.4	19.1
(number)			4230	13,224		12,785	6452			1806	5855		6586	3361

Percentile sums may differ from 100 due to rounding error.

Thus the 1–99 *Reais* income category had 40% of the elderly population in 1980 but only 2% in 1995. Alternately, the 100–199 *Reais* income category had 17.8% of the elderly population in 1980 but 55.1% in 1995.

Housing (or Standard of Living) Scale

Of 14 possible variables available in both 1980 and 1995, (material of *external walls*, material of the roof, *electric lighting, sewage, shared toilet, water source, refrigerator, television*, radio, telephone, stove, *cooking fuel*, tenancy, crowding) we found eight of them (*emboldened*) to form a reasonable scale at both times.[2] The housing scale was constructed in the supposedly 'naïve' way of scoring items in terms of having/not having them (1/0) and then summing this up into a scale (World Bank, n.f.). In fact, our scale was based on a well-developed method and was no less arbitrary than using principal components and factor analysis. Furthermore, it has the advantage of being applicable elsewhere. The idea is that various housing items help tap an underlying, latent factor, and must correlate well with each other and them all combined. Choice of scale items was assessed through examining inter-correlations, item-rest correlations, and the computation of Cronbach's α, where $\alpha = kr/1 + (k - r1)r$ (where r is the average inter-item correlation, and k is the number of scale items). For the eight items in 1980, the overall α was 0.898, in 1995 0.848. This is quite satisfactory even if one sets 0.8 rather than 0.7 or 0.6 as a minimum, and most inter-item correlations were over 0.50.[3]

The housing scale percentile distributions of elderly people overall and by marital/sex subgroup in 1980 and 1995 are shown in Table I. One can see at least two points:[4] (1) Loadings are much higher in 1995 than in 1980 and it is clear why scale items fit better in 1980 than in 1995. In 1980 only 29.5% of elderly people had the highest score and an additional 11.4% had a score of 7. By 1995 however, more than half the sample had the highest score and an additional 16.6% had a score of 7. As Baer (1976) had observed for the United States, the 'standard' in 1980 was no longer the standard by 1995; (2) The gender difference, women having somewhat higher scores than men, was unexpected. It could be expected that most married men and married women would have similar levels on the housing scale, but among unmarried people,

women had somewhat better loadings than men. This and related issues will be discussed at greater length further on.

Marital Status

Not only is marital or union status a fundamental aspect of independent living among elderly people in Brazil, but it is furthermore fundamental for reporting income: Many elderly women report no income of their own but expect to live on what is reported as their husband's income. Since there is customary, religious and civil marriages in Brazil as well as formal and informal separation (divorce only becoming legal in 1977), some people who report themselves as married do not, in fact, live with a spouse or companion while others are technically unmarried but live in a union. Thus our study defines marital or union status in a rather unconventional way: if someone was reported as married (legally or consensually) *and* was furthermore cohabiting with a mate, that person was considered here to be married. If not, that person was considered unmarried. Brazil is hardly unusual that in both 1980 and 1995 most elderly men were married but about two-thirds of elderly women were unmarried (Table I).

Results

As might be expected, almost all the correlations between the various possible indicators of SES (education, income, housing scale) appear to be fairly high, positive and, within marital/sex groups, statistically significant (Table II). However, even the highest correlation – 0.576 between education and the housing scale among married men in 1980 – is not so high that the different variables could serve as substitutes for each other. While one might want to use education, income and the housing scale together in a multivariate analysis, that approach makes most sense if each indicator has a similar relationship with the characteristic of interest. However, we shall see that such is *not* the case here.

Using different socioeconomic indicators here could lead to different conclusions about the relation between SES and independent living. For instance, the correlations between independent living on the one hand and education, income and the housing scale on the

other among unmarried men in 1980 were −0.084, 0.047 and −0.269 – a negative, a somewhat weak positive, and a strong negative. (Table II). Correlations among unmarried women in 1980 were similar. In 1995, the correlations among unmarried men were either insignificant or strongly negative, while among unmarried women there were two positive correlations and a weak negative one. Among married women, correlations likewise were either insignificant or inconsistent with others. Only among married men did the different variables seem to provide a consistent relation with independent living although the correlations in 1980 seemed quite weak.

Again, consider education. If we were to come to some overall conclusion using education as an indicator of SES, we might say that living alone among unmarried elderly people appeared to be negatively related to status in 1980 but that by 1995, the relationship was either neutral or positive. Among married people, independent living appeared to have only a weak positive correlation (at best) with social status in 1980, but that this grew a little stronger by 1995 (Table II). At no time did education have a consistent relation with independent living among all the groups, and only among married men did education have a consistent relationship with independent living among any subgroup.

What about income? If we were to come to some overall conclusion using income as an indicator of SES, we might say that excepting married women, income had a generally positive correlation with independent living among elderly people in both 1980 and 1995, *but* that its relation did *not* become more positive over time (Table II).

Finally, consider the housing scale. If we were to use the housing scale as an indicator of SES, we might say that SES was consistently negatively correlated with solitary living among unmarried people in both 1980 and 1995 but positively correlated with independent living among married men and women in three of four instances in 1980 and 1995 (the exception being no relation among married women in 1980 (Table II).

DISCUSSION AND CONCLUSION

Since we might come to different conclusions about the relation between independent living and SES among elderly people depending on

TABLE II

Spearman correlations between education, income (in categorical form), housing scale (9 pts.) and Independent Living (0 = no/1 = yes) among gender/marital subgroups in 1980 and 1995

	1980 Everyone (n = 36,691)				1995 Everyone (n = 17,608)			
	Educ	Icat	Scale	Ind	Educ	Icat	Scale	Ind
Educ		0.360	0.530	−0.002		0.342	0.492	0.057
Icat	0.360	0.282	0.030		0.342		0.220	0.030
Scale	0.530	0.282		−0.090	0.492	0.220		−0.019
Ind	−0.002	0.030	−0.090		0.057	0.030	−0.019	
	Unmarried men (n = 4230)				Unmarried men (n = 1806)			
Educ		0.397*	0.514**	−0.084**		0.406**	0.446**	−0.012
Icat	0.397*		0.371**	0.047**	0.406**		0.343**	0.026
Scale	0.514**	0.371**		−0.269**	0.446**	0.343**		−0.235**
Ind	−0.084**	0.047**	−0.269**		−0.012	0.026	−0.235**	
	Married men (n = 13,224)				Married men (n = 5855)			
Educ		0.495**	0.576**	0.019*		0.490**	0.534**	0.075**
Icat	0.495**		0.523**	0.015*	0.490**		0.402**	0.040**
Scale	0.576**	0.523**		0.015*	0.534**	0.402**		0.080**
Ind	0.019*	0.015*	0.015*		0.075**	0.040**	0.080**	

TABLE II

Continued

	1980 Everyone (n = 36,691)				1995 Everyone (n = 17,608)			
	Educ	Icat	Scale	Ind	Educ	Icat	Scale	Ind
	Unmarried women (n = 12,785)				Unmarried women (n = 6586)			
Educ		0.343**	0.517**	−0.029**		0.410**	0.469**	0.045**
Icat	0.343**		0.295**	0.146**	0.410**		0.277**	0.114**
Scale	0.517**	0.295**	−0.168**		0.469**	0.277**		−0.073**
Ind	−0.029**	0.146**		−0.168**	0.045**	0.114**	−0.073**	
	Married women (n = 6452)				Married women (n = 3361)			
Educ		0.083**	0.550**	0.006		−0.033*	0.516**	0.044**
Icat	0.083**		0.103**	0.035**	−0.033*		−0.169**	0.021
Scale	0.550**	0.103**		−0.017	0.516**	−0.169**	0.039*	
Ind	0.006	0.035**	−0.017		0.044**	0.021	0.039*	

It is not possible to assess the significance of correlations among the entire sample because observations are not independent.
*Significant at $p < 0.05$.
**Significant at $p < 0.01$.

which indicator we used, what conclusions might we come to that could aid future social scientific investigation? First, no indicator is superior to any other. Its value depends on the subject being studied. Second, each potential indicator should be identified for what it is, for example as education rather than SES. Third, it could be advantageous to use all the indicators since they can each help tap different aspects of SES, *if* they are then identified for what they are rather than just 'socioeconomic status,' and *if* they do not contradict each other. We focused on education, income and a housing scale because neither occupation nor assets are particularly informative for retired or bereaved elderly people in less developed countries.

Education can be a good indicator for women as well as men and is a much better indicator of past social standing than is current income or current housing quality. But we observed change in education's correlation with independent living among elderly people that could have resulted as much from Brazil's changing educational situation in the early 1900s as from any real change between 1980 and 1995 in the socioeconomic meaning of independent living among elderly people. In general, we found education to be more positively correlated with independent living over time (but not among unmarried men).

An advantage of using income is that *current* income can be juxtaposed with *current* living arrangements, at least for unmarried people and for married men. Income among unmarried women was relatively good in Brazil since the 1988 constitutional changes, but such coverage is unusual. In general, in countries in which only workers in a relatively minor formal labor force are covered by pensions, income may *not* be a good indicator among elderly people. (Income was *not* correlated with independent living among the sample of 1806 unmarried *men* in 1995, although we found the housing scale to have a moderately negative correlation.)

In many ways, a housing scale is a much better measure of poverty or material well-being than is the cost of a bag of groceries multiplied by some factor because it considers more items together in a summary measure. And it is more stable than current income. But the housing scale still only measures material possessions whereas a characteristic such as education may measure cultural or social qualities as well. In addition, a housing standard suitable for one place and time may prove inapplicable to another place or time, and

material qualities alone may be poor predictors of the value placed on particular housing opportunities.

If we want one indicator of SES, then we have a dilemma, at least as far as independent living among elderly people is concerned, since one can have no relationship while another has a negative relationship and a third has a positive relationship. One could argue that all three indicators – education, income, the housing scale – should be used when possible and interpreted carefully, not just labeling them 'socioeconomic status'. For women, even this may not be possible if "income" is not a good indicator for them. In Brazil, elderly married women especially may have no income but still live in fairly good housing. Then, if we wanted to compare genders, we would have to use education and/or the housing scale.

In the end, we used both education and income to help indicate SES in Brazil for our study of independent living among elderly people, but we were not particularly sanguine about doing so, and we put much less weight on results for married elderly women than on results for married elderly men or unmarried elderly people of either gender (De Vos and Andrade, 2003). The housing scale had attracted us because we ideally wanted an indicator that applied to both men and women, and unmarried and married people equally. But if we had used it, we would have been in the uncomfortable situation of trying to make sense of the fact that income and education were often positively associated with solitary living among unmarried elderly people even as the housing scale was negatively associated with solitary living among those same people. This certainly is not to say that a housing scale would not be of value, especially if its effect were interpreted properly. In fact, it might be very useful to learn that education and income have positive effects where a housing scale has a negative effect. But beware.

NOTES

[1] Living quarters items include: (1) location, (2) type, (3) occupancy status, (4) ownership, (5) number of rooms, (6) floor space, (7) water supply system, (8) toilet and sewerage facilities, (9) bathing facilities, (10) cooking facilities, (11) lighting and/

or electricity; (12) Solid waste disposal, (13) Occupancy by one or more households, (14) number of occupants. Generally, censuses have also asked about the materials of the outside walls, the materials of the roof and the material of the floor.

Household items have included (1) radio, (2) television, (3) telephone, (4) VCR player, (5) blender, (6) computer, (7) refrigerator, (8) automobile, (9) washing machine, (10) hot water heater, (11) cell phone, (12) microwave oven, (13) sewing machine, (14) air conditioner, fan (15) bicycle, (16) motorcycle, (17) hi fi, tape cassette, CD or DVD player, sound system, (18) dish washer.

[2] The coding was different in different years, but we standardized the information in the manner below:

Many people expect tenancy (whether own/buying or not) and crowding (4+/other or 2+/other people per bedroom) to be good indicators but they were not well-related to other housing items.

[3] There is no consensus on the interpretation of Alpha (see Carmines and Zeller, 1979; De Vellis, 1991). One suggestion is that below 0.6 is unacceptable while between 0.8 and 0.9 is very good (De Vellis, 1991). Others would require a minimum of 0.7.

[4] Also (figures not shown), scale means tended to be lower than the national average among rural residents, higher among urban residents. There still appeared to be a satisfactory level of distribution in both settings however.

	Value	
	1	0
Material of external wall	Masonry/wood	Non-durable
Material of roof	Durable	Non-durable
Electric lighting	Yes	No
Sewage system	Piped/septic system	Other
Toilet	Exclusive	Shared/none
Water	Piped	Not piped
Refrigerator	Yes	No
Television	Yes	No
Radio	Yes	No
Telephone	Yes	No
Stove	Yes	No
Cooking fuel	Gas/electricity	Other
Tenancy	Own	Other
Crowding	Low	High

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