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Poverty and Equivalence as Social Constructions

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POVERTY AND EQUIVALENCE AS SOCIAL CONSTRUCTIONS

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INTRODUCTION

Members of modern societies use a wide range of goods and services to effect their participation in social relations, and their sense of social identity. As a part of common cultural understandings members assume the necessity for particular material underpinnings to their activities in carrying out the social roles which constitute participation in their communities (Parsons and Smelser, 1956).

Because these are highly stratified societies the level of economic resources available to individuals and families varies greatly. People have a lively sense of what different levels imply in terms of both with whom an individual is likely to participate, and the kind of activities in social participation which are feasible.

This paper will argue that a correct approach to the study of poverty, or low income, or economic deprivation, must proceed from a sociologically grounded understanding of the interpenetration of material and social well-being in modern societies.

The empirical analysis will show an interrelated set of findings concerning how the prevalence of poverty or low income is best measured to connect quantitative findings with the body of sociological knowledge about low income groups.

From a reanalysis of Gallup poll data covering the period 1950-1986, I conclude that the elasticity of the poverty line is unitary.

Using Gallup poll data for the period 1979-86, I conclude that children are cheap. The family equivalence scales implied by a wide range of polls suggest that the scales used in most social programs and in much research seriously overestimate the marginal social costs of additional family members.

The poll data suggest that there are systematic variations in need according to the age of householders.

I show that there is a rather high degree of consensus and consistency over time on these matters. Survey results suggest that social definitions and individual utility based measures produce similar results.

It is consistent with survey findings to require poverty measures to include the effect of differences in income among the poor. Evidence suggests that the degree of poorness increases as a power function of declining income.

These various considerations suggest that the search for a single socially validated poverty line is not useful. It is not likely that there is a single point at which mere income difficulties translate into serious economic deprivation. Instead it is more useful both for descriptive and policy purposes to examine the continuum of lower incomes and its correlates.

POVERTY AS LOW SOCIAL STANDING

Most governments use income standards to define those families who are objects of social concern. I will call these government standards *state poverty lines*. These poverty lines may be implicit or explicit. Explicit lines define poverty or low income as a condition -- examples would be the U.S. Poverty Line or the Swedish existence minimum. These lines are then used to determine eligibility for different social programs. Implicit poverty lines are determined by examining eligibility requirements for public assistance or other minimum income programs -- thus we find Supplementary Benefits guarantees in the United Kingdom used as a poverty line.

But, my interest here is in *societal poverty lines*, not states'. There is no necessary connection between the two. States' poverty lines are politically determined and may differ quite dramatically from the economic resources which define a person as poor in the ongoing life of a society.

It has long been recognized (reference is usually made to Adam Smith or Marx) that poverty is relative to the mainstream standard of living of a nation. The social theoretical base for such a notion was quite well-developed by social scientists in the 1940s and 50s -- particularly by sociologists like Talcott Parsons and David Riesman and a few economists such as James Duesenberry. The latter argued that after some quite minimum income is reached the impulses "to increase expenditure for one individual depend on the ratio of his expenditures to the expenditures of those with whom he associates" (Duesenberry, 1967).

To make this argument implies that poverty is essentially a matter or social standing or social class. Poverty in this view is persistent poverty which results in a person's not being able to act out mainstream social roles. It leaves aside the issue of transitory poverty which could conceivably strike people of any social class. (Although we would expect the working class to be most vulnerable to episodes of transitory poverty.)

Sociologists have argued that social behavior is oriented to conceptions people have of the "standard package" of goods and services that obtains in a society at a given time (Riesman and Rosebourough, 1960). The standard package is the pattern of consumption characteristic of the average members of the society -- in social class terms the stable working class and the lower middle class.

From this perspective a social minimum is defined as "a certain minimum of possessions in order for the family to meet cultural definitions (as opposed to the mere legal definitions) of a family" (Parsons and Smelser, 1956). Thus, if a family's income is insufficient to supply the required minimum we may well call them poor.

It is important to recognize that nothing in this conception of poverty implies that the definition of poverty is merely subjective, or even that poverty is defined consensually. Rather the argument is that objectively people cannot carry out the roles, participate in the activities, maintain the social relations, that are definitive of mainstream members of society if their resources (over some period of time) fall short of a "certain minimum" (cf. Townsend, 1979). In such a situation inadequacy of resources precipitates a lower class style of life that is reactive to the inability to live the life identified with the standard package

(Davis, 1946, Rainwater, 1966, Rainwater, 1974, Coleman, Rainwater and McClelland, 1978.)

But this objective reality is no secret from the members of the society. They are part and parcel of its workings. Thus they respond to others in terms of their perceived social standing and reinforce definitions of each other as poor or prosperous, average or just getting along, etc.

When people are asked to describe poverty their statements fit well with the perspective outlined above. Survey respondents can give lively descriptions of different living levels -- comfortable, just average, getting along, having a hard time, poor. And they see these types of socio-economic situations as having the largest role in defining a person's social standing. Thus in a summary of what survey respondents twenty years ago said about living in poverty I observed:

> Poverty, people tell us, is not just not having things. It is also a social and psychological condition in which there are specific effects on how people feel about themselves (depressed, angry, miserable) and on how they behave (family problems, neighborhood conflict, crime). The difference between getting along and being poor is the difference between hard-pressed optimism and pessimism, between a good chance for things to get better and nothing ever changing. The person living in poverty is not the Middle American; he has passed over an invisible border. (Rainwater, 1974, p. 135)

People who are not poor shy away from confronting poverty because they find the experience painful. More important, people who are poor try not to admit it to themselves exactly because the admission of "failure" adds to the misery they feel from their objective situation. Thus in interviews poor people, lower class people, are often able to characterize the situation of others like themselves in lively detail, but they often seek to distance themselves personally from that common plight (Coleman, et al, 1978).

I have emphasized the objective nature of poverty, its dependence on patterns of relationships, activities and cultural images. But the rest of this paper deals with attitudinal measures concerned with income standards. Given the perspective developed above it should be clear that I use attitudinal data as a shortcut to testing ideas that are developed from the sociological perspective on living standards. The views people offer in surveys, then, are taken not as defining poverty but as indexes of the patterns of social behavior relevant to understanding the effects of low income.

THE POVERTY LINE ELASTICITY IS UNITARY

The argument for a fully relative standard of poverty is qualitative, based either on the social scientist's impressions from general observation and reading or in modern social science based on qualitative studies of community life. There is also highly suggestive evidence from the evolution of minimum standards budgets from the late 19th century to the present (Ornati, 1966, Applebaum, 1977). The evidence tends to support the hypothesis that these budgets increased proportionately with increases in per capita national income.

More recently researchers have turned to public opinion polling questions which ask the amount of money respondents associate with particular living standards. The U.S. Gallup Poll asked respondents in 1937 "How much income a week do you think the average family of four needs for health and comfort in this community?" The same question was asked in 1939, 1942, 1944 and 1963. Because of the small number of observations (and the primitive approach to sampling and interviewing of these early years) it would be difficult to do a robust test of the relativity hypothesis with these data.

Fortunately the Gallup Poll asked a similar question with exactly the same wording in at least one survey in almost every year from 1946 through 1986[1]. Several people have analyzed data from these polls through sometime in the 1970s, but they have come to contradictory conclusions (Kilpatrick, 1973, Rainwater, 1974, Levenson, 1978).

This Gallup question asks: "What is the smallest amount of money a family of four needs to get along in this community?" Beginning in 1978, a second question was asked about the smallest amount of money the respondent's own family needs.[2]

The Gallup Poll publishes a median response to the survey question. The survey microdata for most years are also available from the Roper Public Opinion Research Center. Using the microdata one can calculate averages that are more stable than the median (and correct Gallup's undocumented way of calculating the median).[3] One can also analyze subgroups -- e.g., families of four persons. And one can carry out multivariate analyses.

Table 1 presents calculations for the total sample's mean response to the family of four question for the period 1950-1986. I have used two indicators of aggregate income as a base for comparison to the mean response. One is "per couple consumption" which is estimated as twice personal consumption expenditures divided by the number of persons 18 years of age and older. I have also calculated mean household income from the separate CPS series of mean family income and mean income of unrelated persons.

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[1] Gallup stopped asking the question in 1986 in connection with a shift from in person to telephone interviewing.

[2] Similar questions have been asked in other countries, but it is difficult to locate the relevant data. We have one analysis of Australian data for the period 1945-1988 (Saunders and Bradbury, 1989). A long series exists for France but the data after the mid 1970s have not been released. The Eurobarometer survey has asked similar questions but unfortunately the responses are coded into categories which make it very difficult to derive useful findings.

[3] The mean is preferable to the median because the amounts given by respondents are very strongly affected by a rounding tendency. For many years $100 was a popular answer. In the 80s the popular response was $300. Popular responses thus tends to be "sticky," staying at one level for some time and then jumping to the next simple response -- from $50 to $100, or from $200 to $300. Means, either arithmetic or geometric, tend to move more smoothly from year to year. For the surveys considered here the median averages 95.1% of the mean, and the geometric mean averages 90.3% of the mean. (See Appendix.) I am indebted to Cheryl Minton for assembling these surveys into a manageable dataset.

Table 1

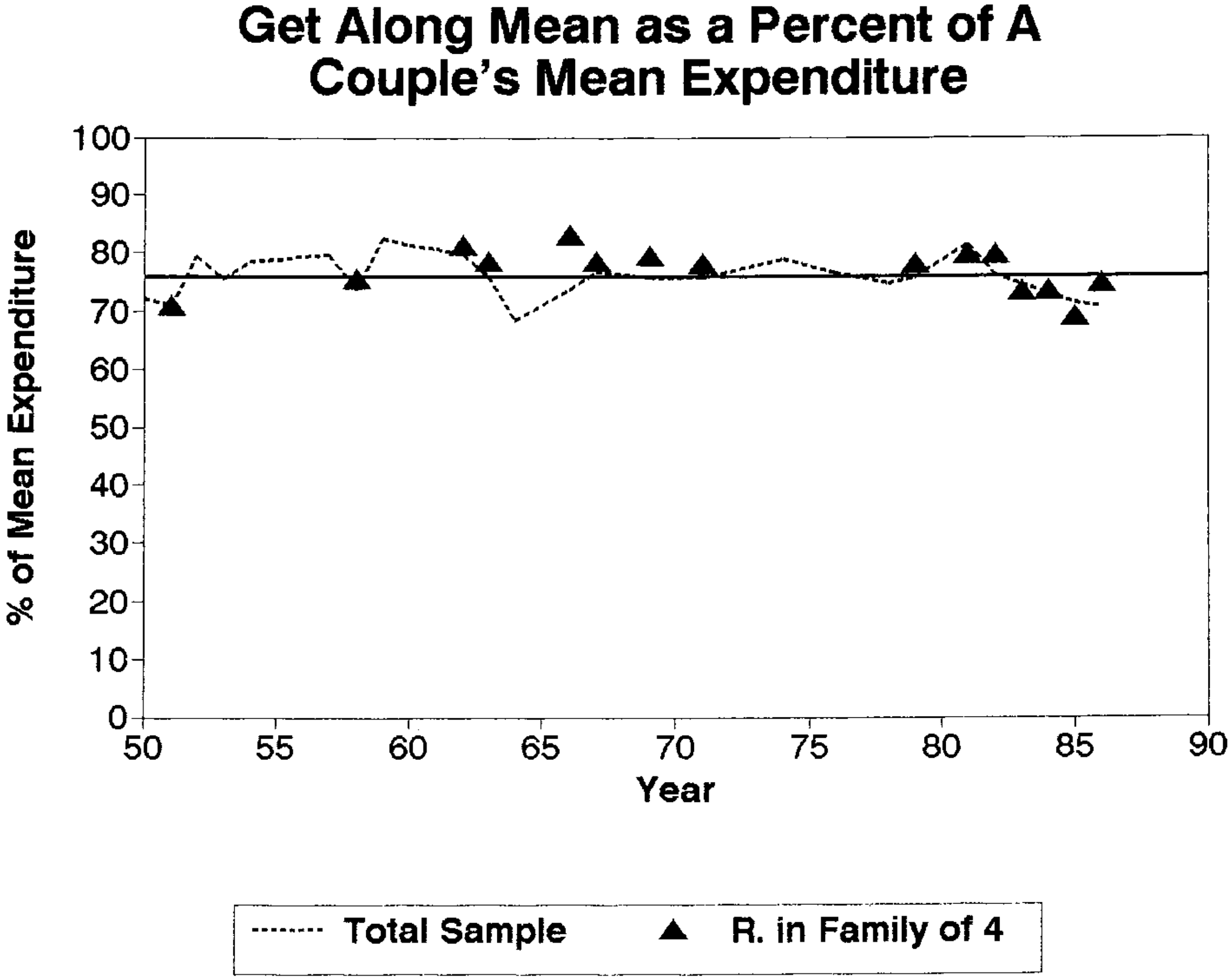
Weekly Amount Necessary for A Family of Four to Get Along 1950 - 1986

Year	Mean Get Along Amount		% of Couple's Consumption		Per Couple Consumption	Household Mean Income
	Total Sample	4 Person Family	Total Sample	4 Person Family		
50	48		72.1		3461	3331
51	51	51	70.9	70.8	3770	3661
52	62		79.6		4051	4042
53	60		75.4		4122	4140
54	64		78.6		4225	4171
57	75		79.8		4884	4860
58	70	72	73.9	75.6	4925	4906
59	83		82.4		5237	5299
60	84		81.3		5372	5526
61	84		80.8		5409	5620
62	85	86	79.8	81.1	5508	5829
63	85	88	75.9	78.5	5822	6135
64	83		68.2		6324	6593
66	97	109	73.8	83.1	6838	7152
67	111	114	76.7	78.7	7524	8037
69	118	124	75.6	79.5	8116	8899
71	136	140	75.7	78.2	9341	10306
74	169		78.8		11152	12213
76	187		76.5		12715	13739
78	219		74.7		15258	16197
79	244	251	75.8	78.2	16713	17633
81	304	297	81.6	79.8	19390	20618
82	304	318	76.2	79.9	20709	22129
83	315	311	74.5	73.4	22015	23407
84	334	336	72.9	73.5	23788	24940
85	349	337	71.3	68.9	25451	26504
86	364	387	70.5	74.9	26896	27995

The table gives mean responses for the total sample and for respondents in four person families (in years for which I have the microdata and a family size variable exists).

On average the mean response is 76.1% of the per couple consumption for the total sample. Figure 1 charts these responses. Visual inspection suggest that there is no linear trend -- the elasticity is unitary.

FIGURE 1


Get Along Mean as a Percent of A Couple's Mean Expenditure
% of Mean Expenditure
100
90
80
70
60
50
40
30
20
10
0
50
55
60
65
70
75
80
85
90
Year
Total Sample
R. in Family of 4

Regression analysis allows us to be more precise. Two specifications will be useful. In the first the annual get along amount (G) is hypothesized to be a linear function of mean couple expenditure or of mean household income (Y):

$$G = a + bY \qquad (1)$$

The hypothesis of unitary elasticity in the linear equation requires that a = 0 and b be equal to the average of annual ratios of G to Y.

The second specification is linear in the logs G* and Y*.

$$G^* = a + bY^* \qquad (2)$$

Unitary elasticity in the loglinear equation is slightly different -- a is hypothesized equal to the mean of the log of the average annual ratios of G to Y, and b = 1.00. We can estimate this relationship by the regression:

$$G^* - a = G' = bY^* \qquad (3)$$

The results of regressions with a and b respectively constrained are given in Table 2 along with regressions in which a and b are unconstrained. I regress G and G' on per couple consumption (PCC) and mean household income (HHI). Regressions are run for the estimated income aggregates during the month of the survey, and 12 months before the survey.[4]

In the linear equations the constants are small and mostly with low t ratios. The coefficients are very close to the average G/Y proportion. For example, the mean percentage of couple's consumption is 76.1% and the coefficient is 75.1%. There is little change in the coefficients when the constant a is not constrained to be 0.

In the loglinear equation we find that constraining a to equal the mean of log G/Y produces elasticity coefficients that are unitary. When a is not constrained the coefficients are only slightly lower.[5]

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[4] Using generalized least squares regression to correct for autocorrelation does not change the coefficients. The results indicate that autoregression is a problem with the last two or three observations, but eliminating these years does not change the unitary elasticity result.

[5] The economists who have worked with this kind of data have regressed constant dollar survey responses on constant dollar aggregate income measures. From a sociological perspective this seems unwarranted since the survey respondents are making judgements in terms of the current economy. However, the specifications with a constrained are not affected by price adjustments. If a is unconstrained then the results are somewhat affected.

Table 2

Regression of Annual Get Along Amount on Aggregate Income Measures

	Constant Constrained		Constant Estimated	
	Total	R in Fam 4	Total	R in Fam 4
Linear equation:				
Coefficients:				
Unlagged PCC	0.745	0.727	0.751	0.727
PCC lagged 1 yr	0.795	0.783	0.802	0.780
Unlagged HHI	0.706	0.686	0.713	0.692
HHI lagged 1 yr	0.753	0.734	0.760	0.737
Constants:				
Unlagged PCC	0	0	273	457
PCC lagged 1 yr	0	0	180	397
Unlagged HHI	0	0	336	408
HHI lagged 1 yr	0	0	294	423
Constant t ratios:				
Unlagged PCC	na	na	1.897	1.499
PCC lagged 1 yr	na	na	1.093	1.201
Unlagged HHI	na	na	2.759	1.534
HHI lagged 1 yr	na	na	1.999	1.362
Adj. R2:				
Unlagged PCC	0.998	0.994	0.997	0.991
PCC lagged 1 yr	0.997	0.992	0.997	0.989
Unlagged HHI	0.998	0.996	0.998	0.993
HHI lagged 1 yr	0.998	0.994	0.997	0.990
Loglinear equation:				
Coefficients:				
Unlagged PCC	1.000	1.000	0.983	0.979
PCC lagged 1 yr	1.000	1.000	1.002	0.991
Unlagged HHI	1.000	1.000	0.950	0.964
HHI lagged 1 yr	1.000	1.000	0.964	0.969
Constants:				
Unlagged PCC	-0.275	-0.264	-0.122	-0.068
PCC lagged 1 yr	-0.221	-0.204	-0.243	-0.124
Unlagged HHI	-0.313	-0.313	0.138	0.023
HHI lagged 1 yr	-0.257	-0.251	0.070	0.039
Constant t ratios:				
Unlagged PCC	na	na	-0.946	-0.361
PCC lagged 1 yr	na	na	-1.929	-0.634
Unlagged HHI	na	na	1.110	0.164
HHI lagged 1 yr	na	na	0.552	0.244
Adj. R2:				
Unlagged PCC	1.000	1.000	0.995	0.994
PCC lagged 1 yr	1.000	1.000	0.995	0.994
Unlagged HHI	1.000	1.000	0.995	0.997
HHI lagged 1 yr	1.000	1.000	0.995	0.996

Note: All coefficient t ratios are above 35.

Another test of the hypothesis of unitary elasticity involves correlating the residuals from the constrained equations with survey year. There should be, and is, a near zero correlation. For example, the residuals from the PCC equation have a coefficient of determination of .004 in the linear specification and .001 in the loglinear one.

It is of interest to compare our results with the one comparable study, that of Saunders and Bradbury (1989) in Australia. They, too, found unitary elasticity of aggregate income measures (per capita disposable income and per capita consumption expenditures).

However, their question was different, asking what was needed to "keep in health and live decently." This question echoes the U.S. Gallup question that has not been asked since 1963 (Rainwater, 1974, pp 50-52). That year Gallup asked both questions; the "health and comfort" mean was about a third greater than the get along mean or roughly equal to per couple consumption. Saunders and Bradbury used per capita rather than per adult consumption expenditures and household income as their aggregate income variables so it is hard to compare their coefficients with those given in Table 2. They find that on average the health and decency amount is 1.786 times per capita consumption. This might translate into an average of around 1.2 times per couple consumption as defined in this paper.

HOW MUCH CONSENSUS?

The sociological argument requires that there be a high degree of consensus in society about relative living levels. This means we need to examine the extent to which there are systematic variations by social category in people's judgments about the get along amount. I will examine the effects of age, family size and income on people's responses to the get along question.

One might expect that respondents in families of four would have different views from those in other families. The two tables and Figure 1 indicate that this is not so. The regression equations for the total sample and for people in families of four are practically identical. On average, the get along amount is 76.9% of per couple consumption for the latter compared to 76.1% for the total sample.

More generally, I do not find that conceptions of how much a family of four needs vary much by age or family size. Table 3 shows the average variations for the surveys between 1951 and 1986 for which I have the microdata.

In general the pattern of differences is not stable from one survey to the next. With respect to age I do find that persons 55 and over seem to think the two parent/two child family needs less than younger respondents do. But, up to that age there are very small average differences.

The variations by size are also quite small. For both age and size it is possible that the differences we do find are a function of differences in income rather than age and size.

We have data on family income for fourteen surveys beginning in 1962. Redefining Y from (2) above to be survey respondents' incomes rather than annual aggregates, we can estimate

Table 3

Deviation of Mean Get Along Amounts By Age and Size
1951 - 1986

By Age		By Size	
<25	-3.9	1	-4.5
25-34	-1.4	2	-3.2
35-44	0.0	3	-2.5
45-54	-3.4	4	0.0
55-64	-7.8	5	-1.6
65+	-13.8	6	0.7
		7 or more	-6.2

Note: Expressed as a percentage deviation from the mean get along amount of 35-44 year olds, or 4 person families. Twenty-three surveys provide data by age: fifteen by size.

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the impact of family income on response to the get along question. Table 4 presents the regression results for each year. On average the family income elasticity of the get along amount is .157 and the average coefficient of determination is .073. This indicates that respondents' answers vary systematically with income but that the effect is small, and income is very weakly correlated with people's answers. The regression implies a point (YMIN) at which respondents incomes just equal their responses. The loglinear specification is:

$$\mathrm{YMIN}^* = a/(1-b) \tag{4}$$

The table shows YMIN* for each year. On average YMIN is 96.3% of the geometric mean.

We can interpret this result as suggesting a rather high degree of consensus about perceived living levels in society. Even high income people do not exaggerate very much the needed income of the family specified in the Gallup question. The same conclusion can be drawn from the two studies which ask about a wider range of living levels from poor to rich (Rainwater, 1974, Dubnoff, 1985). (This result does not imply that in judging their own family's well-being people are not more strongly influenced by their own incomes, as we will see below.)

DEGREES OF POVERTY

Our languages are rich with words to capture the quality of life associated with different amounts of economic resources. We use these words with various adjectives to further refine the characterizations. We say someone is "very rich," perhaps even "stinking rich." And we qualify degrees of poverty from "very" to "a little".

Table 4

Loglinear Regression of Get Along Amount on Family Income

Year	Coefficient	Constant	Adj. R2	Mean Need	YMIN
62	0.184	6.735	0.086	8.297	8.252
63	0.142	7.107	0.066	8.309	8.280
66	0.182	6.846	0.072	8.433	8.366
67	0.177	7.011	0.088	8.565	8.523
69	0.154	7.259	0.083	8.626	8.585
71	0.156	7.352	0.064	8.757	8.705
78	0.141	7.925	0.055	9.254	9.222
79	0.171	7.711	0.072	9.339	9.305
81	0.148	8.126	0.061	9.557	9.538
82	0.125	8.355	0.049	9.569	9.549
83	0.123	8.414	0.045	9.612	9.591
84	0.171	7.981	0.097	9.669	9.629
85	0.175	7.971	0.089	9.711	9.665
86	0.147	8.282	0.085	9.754	9.711

It is difficult to move from these qualitative characterizations to quantitative measures of well-being. In particular we have poorly developed methods for measuring quantitatively how people evaluate the social circumstances of people at different income levels despite the considerable knowledge we have about how they go about using these evaluations in daily life (Coleman, et al, 1978).

One way to capture the distribution along the qualitative continua of poor to rich is to use summary measures of income distribution. The literature on models of inequality has been particularly lively for some years now (e.g., Atkinson, 1970, Sen, 1973, Cowell, 1977). Those whose particular interest is in social policy have adapted inequality analysis to studying in finer detail the distribution of income below a poverty line, or more broadly, below the median. (e.g., Hagenaars, 1990, Cowell, 1987, Atkinson, 1990).

With respect to poverty this literature seems to arrive at a consensus as to the kinds of measures one needs to describe aggregate poverty in a society:

> The proportion of the population below a poverty line -- this is the socalled headcount ratio (H).
>
> The average poverty gap (I) -- the average difference between a poor person's income and the poverty line. This can be converted into the aggregate poverty gap to describe the transfer of income to the poor required to eradicate poverty.

The inequality among the poor -- any one of a number of measures designed to summarize the distribution of incomes of the poor.

Some of the latter measures take into account inequality aversion, the degree to which lower incomes should be weighted more heavily in summarizing the distribution. But inequality aversion is thought to characterize either a detached observer of social welfare or a policy maker. Inequality aversion is an index of how much loss of aggregate income one would tolerate to have a more equal distribution. It does not seek to capture the social meanings associated with particular levels of income.

However, the mathematics of these measures may do nicely to summarize social misery as well as an observer's inequality aversion. This can be illustrated with data from a small pilot study some years ago which sought to measure people's sense of magnitudes of poverty associated with different incomes (Rainwater, 1974, pp. 147-158). The study sought to develop a measure to be used in a poverty index that would take into account the fact that "poverty becomes more severe at an increasing rate as successive decrements of income are considered" (Watts, 1969).

Respondents were asked to indicate whether they considered families described in terms of given income and family size to be poor or not; if the family was considered at least somewhat poor, then they were asked how poor they considered the family to be on a ratio scale compared to a family of 5 who had an income of $2400. The average responses of the sample can be represented quite well as a function of the "income deficit" (D) of the family. D is defined as median equivalent income minus the equivalent income of the stimulus family.[6] Poorness (P) is estimated using the following loglinear equation:

$$P^* = a + bD^* \qquad (5)$$

Figure 2 plots the estimated function against the 16 stimulus families and the comparison standard family, and gives the coefficients for the loglinear specification. (The constant a is determined by the comparison standard so it is possible to adjust the scales using a different constant for convenience of representation. Figure 2 has been adjusted to a poorness of 10 at half of median equivalent income.)

Obviously a small pilot study carried out in one city at one time cannot establish the parameter determining the relationship between income and degree of poorness as a social and psychological experience. But, the results are highly suggestive. Poorness increases in proportion to the cube of the equivalent income deficit implying that a person who has twice the deficit of another person is thereby eight times poorer.

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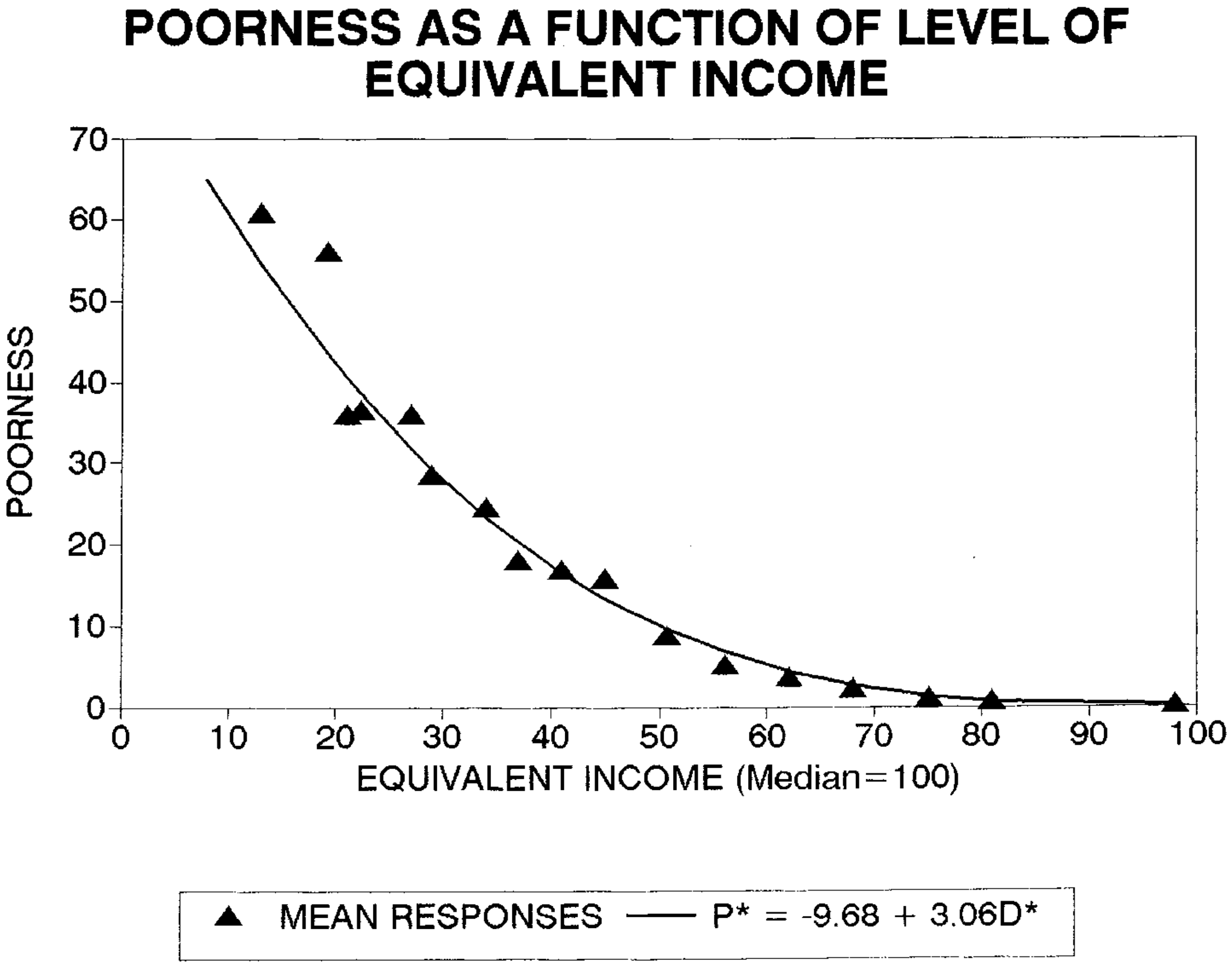
[6] For example, if a stimulus family of four had an income of $5000, $D = 6300 - 5000/4^{.3333}$. The median equivalent income is 6300 and need is defined as the cube root of family size (see below for an discussion of this particular equivalence scale).

Figure 2


POORNESS AS A FUNCTION OF LEVEL OF EQUIVALENT INCOME
70
60
50
40
30
20
10
0
POORNESS
0
10
20
30
40
50
60
70
80
90
100
EQUIVALENT INCOME (Median=100)
▲ MEAN RESPONSES
—— P* = -9.68 + 3.06D*

In short, absolute increases in poverty are larger and larger the lower the income -- as envisioned in Watts formulation which in turn fits well with common sense and popular usage.[7]

Aggregating poorness, then, should be a central measure of poverty along with head count and poverty gap measures. Simplifying our deficit measure let us say that

$$P = [(m-y)/m]^a \qquad (5)$$

with m referring to median equivalent income and y to family equivalent income. The exponent a is assumed to be 3 until empirical work modifies that assumption. Obviously a could differ from country to country.

This measure can be aggregated for the half of the population with incomes below the median by calculating the mean of P. This is the poverty index proposed by Foster, Greer and Thorbecke (1984) with one modification: the poverty line in the above formulation is the median rather than some lower level.[8] In their formulation m is the poverty line; in mine it is the median.

The advantage of this kind of measure is that it is additively decomposable both by income level and by demographic group (for an example see Cowell, 1984).

AGE AND FAMILY SIZE PLAY A ROLE IN DEFINING NEED

We can not explore equivalence scales use the Gallup question about a family of four. We have one strong indication from that question, however, about the degree of common understanding of family needs as a function of size: we observed that those in smaller and larger families did not have dramatically different notion of what a family of four needs than those in such families -- over the years those not in four person families thought such families needed 2.6% less than respondents in four person families.

Beginning in 1979 the Gallup data allow us to using a version of the minimum income question (MIQ) developed by Bernard van Praag in what is sometimes called the Leyden approach to poverty measurement (Goedhart, Halberstadt, Kapteyn and van Praag, 1977). The Gallup question, asked immediately after the family of four question was "What is the smallest amount of money your family needs to get along in this community?"[9] I have analyzed the seven surveys from 1979 to 1986 which have information on respondents' family income and size.

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[7] See the discussion of "images of Lower America" in Coleman, et. al., 1978, pp. 190-209.

[8] I am indebted to Stephen P. Jenkins' 1990 LIS Summer Session lectures for drawing my attention to the Foster, Greer and Thorbecke measure. In all probability the poorness measure I propose could be fitted into others of the general entropy family of inequality measures (Cowell, 1984).

Most interest in the MIQ question has centered on extracting a family size equivalence scale from the answers. Before moving on to that question however, let us examine the effect of age on the answers. When age is taken into account in defining equivalence scales it is usually in terms of the ages of children, or with attention to differing needs of elderly or retired persons. We cannot examine the effect of the ages of children since Gallup asks only about the age of the survey respondent. (I have analyzed Dubnoff's small dataset to see if age of child as well as age of respondent has an effect on MIQ. I did not find an effect.)

AGE DESCRIBES A NEED TRIANGLE

Analysis of each survey produces a highly consistent picture of need increasing steadily with age to the early forties and then decreasing steadily into old age. To demonstrate this relationship most clearly I pooled all seven surveys and used multiple classification analysis to extract the coefficient for the effect of each single year of age on the get along response controlling for income, family size and year of survey. (The get along response, income and size were logged; the year of survey and age were analyzed for the effects of each value.)

Figure 3 charts the coefficients for single years of age and the five year moving average of these coefficients. It is apparent there is a lot of noise, but smoothing shows the underlying relationship. It is not really quadratic; it is linear upwards and linear downwards. The rates of increase and decrease are about the same. Controlling for family income and size need increases about 0.8% a year to around age 40-45 and then decreases at the same rate to the late 60s.

This result suggest that individuals' judgements about how much their families need to get along assume that living is cheaper for younger and older people than it is for those in midlife. Through the broad middle years the age factor in need does not make a lot of difference in the distribution of well-being, but at the extremes it has important effects.

CHILDREN ARE CHEAP

Responses to the get along question suggest that commonly used equivalence scales rather strongly exaggerate the amount of income needed by larger families compared to smaller ones.

To tease out the effect of family size on people's perception of their families' well-being we estimate the effect of age (A) -- defined as the absolute difference between 43 and the respondent's age -- and the logs of size (S*) and family income (Y*) on the logs of the

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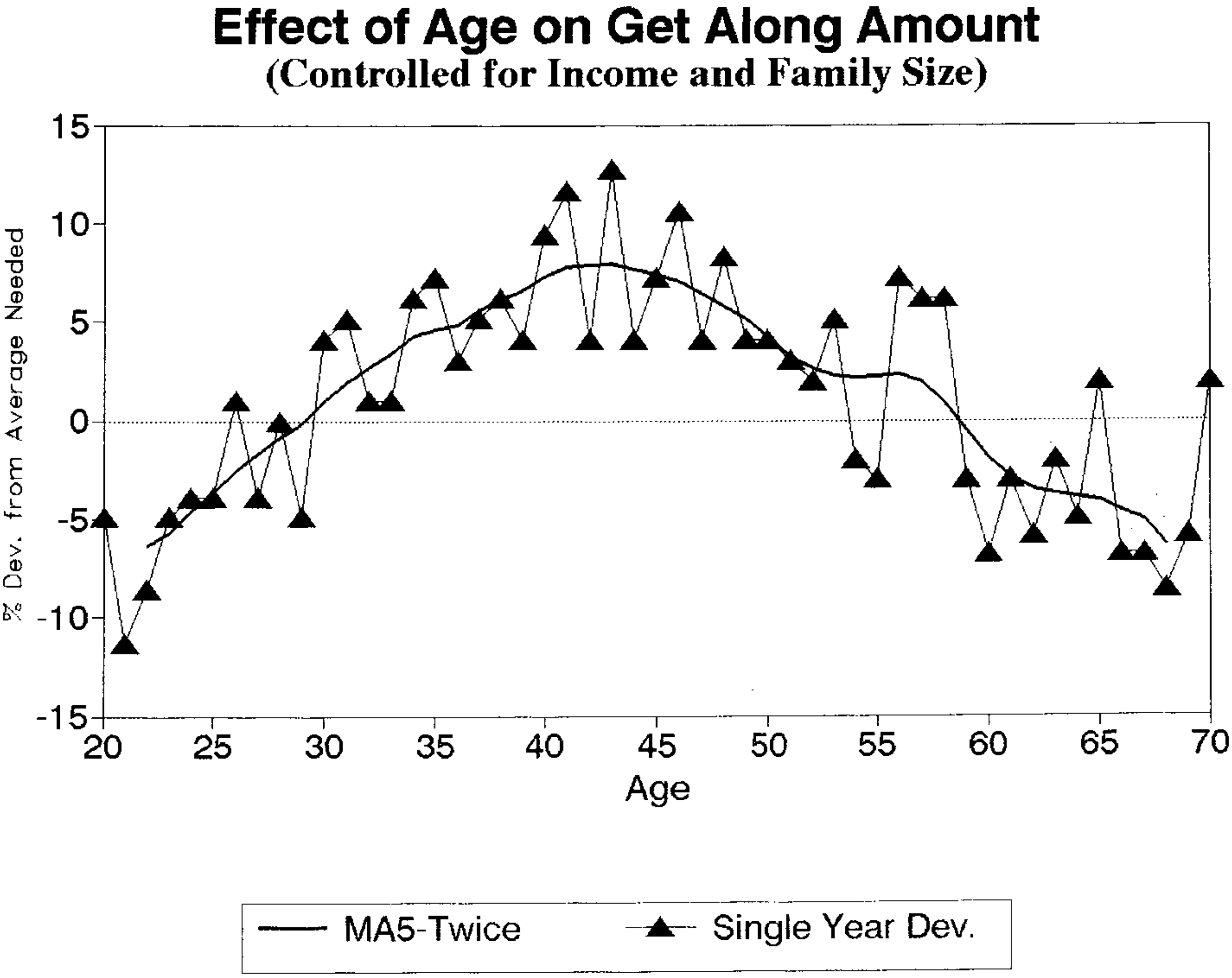
[9] We might expect respondents in families of four to give the same answer to both questions. In each of the surveys analyzed about half of them do, with the balance splitting their answers in roughly equal proportions between less and more.

Figure 3


Effect of Age on Get Along Amount
(Controlled for Income and Family Size)
15
10
5
0
-5
-10
-15
% Dev. from Average Needed
20
25
30
35
40
45
50
55
60
65
70
Age
MA5-Twice
Single Year Dev.

(annualized) response to the get along question (G*).

$$G^* = a + bY^* + cS^* + d|A\text{-}43| \qquad (6)$$

The results of this regression for each of the seven surveys are shown in Table 5.

The adjusted coefficients of determination are much larger for the question about one's own family than about the family of four. The coefficient of determination if almost four times higher for judging own's own situation -- on average .322 compared to .084. (Size and age make little difference in judging the family of four; for the most part the coefficients are not significant.) Yet, when I calculated YMIN for a family of four for each of the two get along questions the average difference between the two over the seven survey years was only 2%. In short regressions for a family of four or the respondent's own family yield the same estimate.

Table 5

Own Family Get Along Amount as A Function of Income, Family Size, and Age Loglinear Regression

Regression results:

	Adj. R2	Income	Size	¦Age-43¦	Constant
79	0.406	0.385	0.257	-0.009	5.338
81	0.318	0.296	0.262	-0.007	6.353
82	0.271	0.282	0.226	-0.008	6.529
83	0.272	0.271	0.211	-0.009	6.697
84	0.311	0.307	0.168	-0.012	6.492
85	0.342	0.372	0.243	-0.001	5.628
86	0.335	0.286	0.186	-0.010	6.686
Mean	0.322	0.314	0.222	-0.008	

Equivalence elasticities:

	Size	¦Age-43¦
79	0.418	-0.015
81	0.372	-0.011
82	0.315	-0.012
83	0.289	-0.012
84	0.243	-0.017
85	0.387	-0.001
86	0.260	-0.014
Mean	0.326	-0.012

As noted above, while income has a consistent effect over the years on judgements about what a family of four needs the effect is not very strong (the average coefficient is .157). The income coefficient for one's own needs is twice as great (averaging .314) indicating that doubling family income will increase the get along amount by about one-quarter.

The coefficient for family size averages .216 and that for age -.008. In order to calculate the implicit family size and age equivalence scale we need to adjust each size and age coefficients for the effect of income by dividing it by (1-b) as in (4) above. This tells us the effect of size and age on any particular level of needed income -- for example, YMIN.

With this adjustment the equivalence elasticity for family size averages .326 and that for age -.012. The survey coefficients vary quite a bit, but with no particular pattern over this seven year period. It would be difficult to invent a theory which would entail changes in equivalence from year to year with no particular trend.

Simplifying we can say that need increases in proportion to the cube root of family size. Need decrease by about one percent for each year's difference between a person's age and 43. Someone in their early twenties needs about eighty percent as much as a 43 year old; someone in the late sixties needs about three-quarters as much.

For family size need increases by the following ratios compared to a one person family:

2 persons	1.26
3 persons	1.44
4 persons	1.59
5 persons	1.71
6 persons	1.82
7 persons	1.93

The hypothesis that there is an interaction between income level and equivalence is a plausible complication of this simple equivalence scale. One might expect that at higher and higher levels of income adjustments for family size would need to be progressively smaller to confer equal well-being. I do not find this effect in the seven Gallup surveys analyzed. To test for the interaction I divided the sample into three income groups: a low income group with 28.7% of the cases; a middle income group with 37.7% of the cases, and a high income group with 33.7% of the cases. (A neat division into low, middle and high thirds was not possible because Gallup categorizes the income variable.) The surveys were pooled after adjusting for changing mean income over time. The coefficients for each group are as follows:

Income Group	Income	Size	Age
Low Income	.171	.248	-.009
Middle Income	.426	.202	-.006
High Income	.330	.196	-.008

It is apparent that the size coefficient of the low income group is larger than for the other two groups. However, when the coefficients are adjusted by the income coefficient (1-b) the size elasticities are .30, .35 and .29 respectively and the age elasticities are -.011, -.010, and -.012.

Thus, the conceptions of need implicit in the regression relations do not seem to differ systematically by level of income. It is of course always possible that more refined techniques would reveal the expected larger impact of size on need at low levels of income compared to higher levels.[10]

We do not have to rely only on these seven Gallup surveys for estimates of size equivalence. Numerous investigators have used this approach to determine how people perceive need as a function of size. Two basic approaches have been taken. The MIQ approach which this Gallup question exemplifies has been used in other surveys in a wide range of countries. A variant, the IEQ, asks respondents to indicate incomes with which they would be dissatisfied, satisfied and inbetween. Isolating the effect of family size on this set of answers yields an equivalence scale (Kapteyn and van Praag, 1976). The second approach extends the idea of the Gallup question about a family of four by asking questions which vary family size and level of living (poor, comfortable, rich, etc.). (See Rainwater, 1974, Dubnoff, 1985.)

The range of responses to the various questions tapping conceptions of need is summarized below:

Surveys	Elasticity	
	Range	Mean
Seven U.S. Gallup 79-86	.26 - .42	.33
14 US surveys	.19 - .43	.33
16 European surveys	.12 - .40	.26

There is obviously considerable overlap between the U.S. and the European series. It will take more systematic research to determine whether there are important differences among countries in size equivalence. The only European country for which we have multiple measures (6) is the Netherlands where the range is from .20 to .36 and the mean is .27.

As noted, survey based equivalence scales produce size elasticities much lower than the average of ones derived by other methods (Whiteford, 1985, Buhmann, et al, 1988, Bradbury, 1989). One finds particular scales covering almost the whole range of possible elasticities from no adjustment for size to per capita adjustment. Scales based on minimum budget estimation and consumption theory average elasticities in the .45 - .55 range, while those based on the Engel method often run even higher, particularly if based mainly on food. But there is no simple way of accounting for differences among socalled objective scales -- studies that seem to use the same methods on the same population often produce widely different results (see particularly the review by Whiteford, 1985). It is possible to find objective scales within the range covered by the subjective ones (Whiteford's list includes nine objective scales with elasticities below .4.) But a consensus budget/consumption theory scale of .5 or .55 implies much larger increases in need with each additional family member than do the subjective scales.

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[10] Dubnoff (1985) does find that the family size elasticity of public views of needed income is greater the lower the level of income asked about (from "prosperous" down to "poor"). But using quite similar questions I did not find such an effect (Rainwater, 1974).

What might account for the difference? Goedhart et al (1977) argue that "our small estimates ... reflect the fact that the preferences within families shift in such a way that material needs do not increase very much... In our opinion, substitution possibilities of this kind are not fully taken into account in current literature on the family equivalence scale." Thus a couple who have a child give up expensive outside activities to enjoy the infant. Equivalence scales should also take into account the contribution to the construction of the family's life style of participation with additional family members (Rainwater, 1974, pp. 107ff, Bradbury, 1989, p. 397).

If one thinks of the maintenance of particular kinds of life style as the goal rather than maintenance of a particular level of material consumption, the lower elasticities elicited by a wide variety of different survey questions make sense. The socalled objective scales tend to exaggerate need because an overly rigid pattern of consumption is assumed to be required to maintain economic well-being.

Given these considerations it seems not unreasonable to take .33 as the ballpark estimate for size equivalence following the sociological logic that has guided the analysis of this paper. Simplifying the age coefficient also we can say that equivalent income (EI) can be defined as:

$$EI = Y \; / \; (S^{.33} * .99^{|A-43|}) \qquad (7)$$

That is, equivalent income is defined as disposable income divided by the product of (a) the cube root of family size and (b) .99 compounded by the number of years difference between an individual's age and 43.

Counting poverty can proceed in various ways after this adjustment for equivalence. The poverty rate as a headcount is often defined as the share of the population who have an equivalent income less than half of the median. In addition one can calculate the degree of poorness of those below the poverty line. In the final section of this paper I consider what difference different equivalence scales, and a relative rather than an absolute poverty line makes.

EQUIVALENCE AND THE CHARACTER OF POVERTY

Equivalence scales affect measured poverty in several ways. Poverty rates may be higher or lower depending on which scale is chosen -- that is, on the magnitude of the size elasticity. The rates are more volatile for some demographic groups than others. Comparisons of rates across countries may be affected. And the composition of the poor will be different depending on the scale chosen.

Using the LIS database we have reviewed these issues and presented estimates of the effects of different kinds of scales using data from ten countries (Buhmann, et al, 1988). We found that for some countries -- e.g., Israel, the Netherlands, the United States -- the poverty rate is not much affected by the size elasticity chosen. For other countries there are large changes in the rate -- for example in Norway the poverty rate declines from 10.3% at an elasticity of .25 to 5.2% at an elasticity of .72. In general, poverty rates are lower at higher elasticities.

Table 6 shows effects averaged over ten LIS countries of changing equivalence from the .33 level to .55 (which is the level of many state poverty lines). It is obvious that the main effect of changing elasticities is to alter the relative chances of small and large families to be counted as poor. The higher the elasticity the more large families are thought to need, and the less small families need. So, low elasticities increase the needs of small families (particularly single persons) vis a vis larger ones. In particular with large elasticities families with two or more children are seen as needier.

Table 6

Effect of Changing Equivalence Elasticity on Poverty Rate and Share of the Poor

	% Change in Rate	% Change in Share
Head under 60:		
Single Man	-30	-16
Single Woman	-38	-24
Solo Mother		
One Child	-30	-17
Two or more	10	32
Married Couple		
No Child	-21	-6
One Child	-4	13
Two or more	50	78
Head 60 and over:		
Single Man	-53	-40
Single Woman	-62	-49
Married Couple	-32	-18

To be read as follows: Changing size elasticity from .33 to .55 reduces the poverty rate of single men by 30%, and their percentage share of the poor by 16%.

Source: Estimated from Buhmann et al, 1988, Tables 12 & 13.

We find that the poverty rate of persons in couple families with two or more children averages a 50% increase, and the share of such persons among the poor increases by 78%.

At the other extreme, the poverty rate of nonelderly single persons decreases by about a third. Among the elderly, however, the declines are much greater -- over 50% for single elderly and about a third for elderly couples. Because the elderly have disposable incomes concentrated in the low to middle range, whether they are counted above or below the poverty line is very much affected by how need is defined.

As an example of the impact of equivalence and absolute versus relative definitions on changes in poverty over time I present data for U.S. poverty rates for children and the elderly. The official U.S. poverty line is defined by an unchanging budget repriced each year in current dollars. The equivalence scale can be approximated very closely by a size elasticity of .55.

To define a relative poverty line I have calculated the distribution of equivalent income using (7) above from the data of the Panel Study of Income Dynamics and defined a poverty line as one half of the median equivalent income in each year from 1967 to 1986.

Interestingly, for the total population the two rates were about the same in 1967. While the absolute rates moved down and up and down again over this period so that there was little change from the first to the last period, the relative rate shows a steady increase -- averaging 14.4 in 1967-69, and 18.2 in 1984-86, an increase of a little over one-quarter.

As context for examining poverty rates of children and the elderly it is of interest to know what proportions of the two group are below the median equivalent income. We find that slightly over half of children are below the median, ranging from 51.4% to 55.5%. A higher proportion of the elderly are below the median, ranging from 70% in 1967 down to the low 60s by the end of the period.

Table 7 shows the published official poverty rates for children and the elderly, and the relative rates calculated from the PSID data using the lower equivalence elasticity of .33 and the age adjustment determined above.

Note that until 1986 the official rates are higher for children than the relative rate. Presumably this reflects the fact that need increases less with size than the official scale does, though this effect is somewhat offset by the fact that the official poverty line is closer to 40% of median income than 50%.

For both series child poverty is higher in the mid 1980s than it was in the late 1960s but the increase is much greater for the relative poverty line. Thus according to the relative definition child poverty has increased by over 50% during this period. Using the poorness measure of (5) we find an increase of about 16% in how poor poor children are. Combining the two we can say that poverty among children has increased by some 80%.

The conventional wisdom about American elderly poverty is that the rate has decreased steadily over this period so that now it is far lower than for children. This is the story told by the absolute poverty lines in Table 7 -- in 1967 elderly poverty was over twice as great as among children but by 1986 it was only 60% as high.

Table 7

U.S. Relative and Absolute Poverty Rates: 1967-1986 for Children and Elders

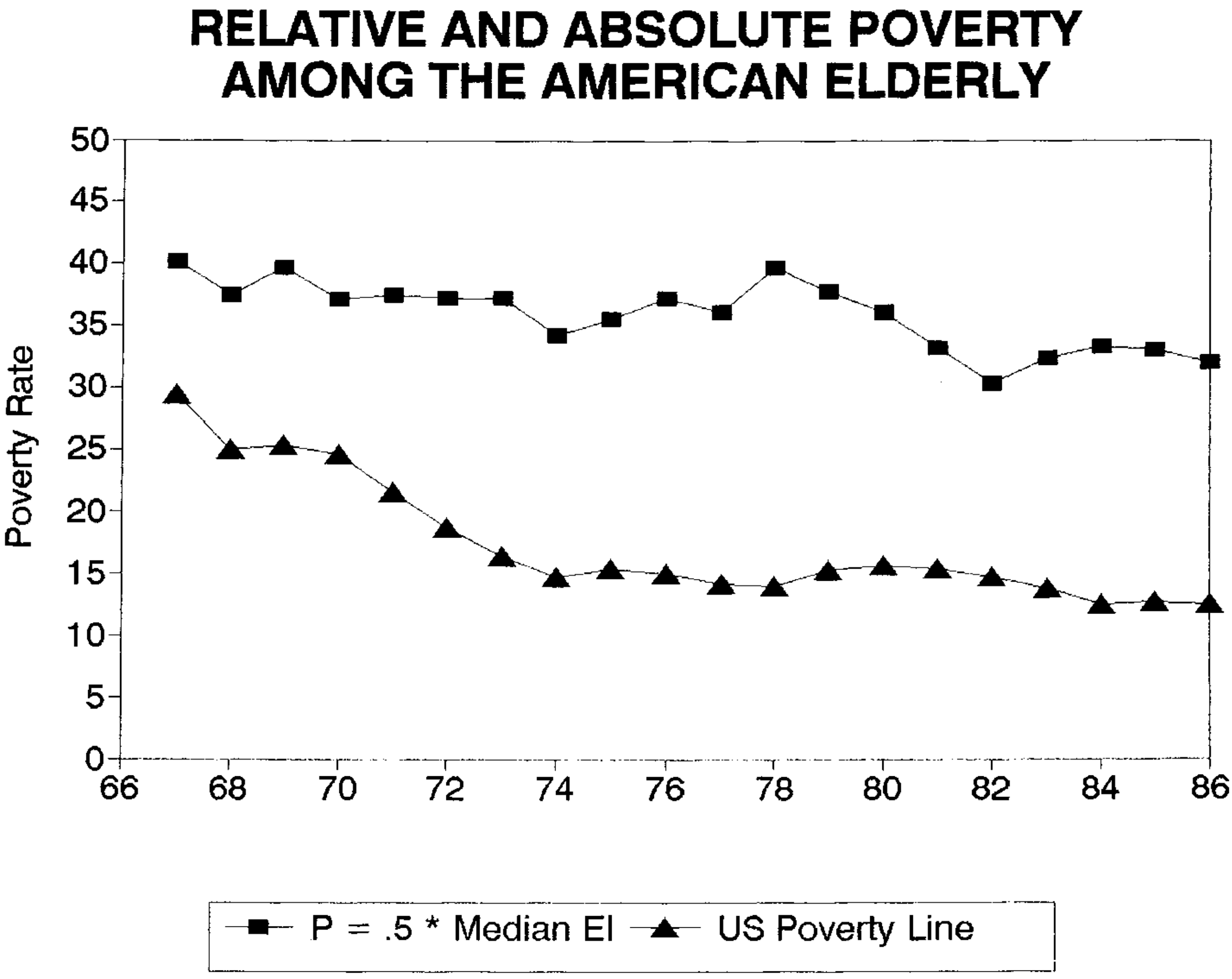
	Poverty Rates				Poorness Measure	
	Children		Elders		Children	Elders
Year	Relative	Absolute	Relative	Absolute		
67	13.2	16.3	40.2	29.5	0.287	0.303
68	12.5	15.3	37.5	25.0	0.271	0.303
69	13.2	13.8	39.7	25.3	0.273	0.316
70	13.3	14.9	37.1	24.6	0.270	0.317
71	13.5	15.1	37.5	21.6	0.267	0.288
72	13.1	14.9	37.3	18.6	0.279	0.291
73	13.5	14.2	37.3	16.3	0.262	0.301
74	13.5	15.2	34.2	14.6	0.268	0.292
75	15.2	16.8	35.6	15.3	0.279	0.280
76	15.1	15.8	37.3	15.0	0.287	0.297
77	13.8	16.0	36.1	14.1	0.304	0.293
78	14.7	15.7	39.7	14.0	0.294	0.292
79	15.0	16.2	37.8	15.2	0.301	0.292
80	15.7	18.1	36.1	15.7	0.292	0.298
81	17.4	19.8	33.2	15.3	0.298	0.300
82	18.0	21.7	30.4	14.6	0.309	0.298
83	20.9	22.2	32.4	13.8	0.305	0.295
84	19.9	21.3	33.4	12.4	0.310	0.302
85	20.0	20.5	33.0	12.6	0.330	0.306
86	20.7	20.2	32.0	12.4	0.323	0.300

The relative poverty line tells a very different story. While elderly poverty has declined it has declined by only 16% compared to a 53% decline according to the official rate. And, in 1986 it was still 60% higher than child poverty.

Figure 4 show the pattern of declining elderly poverty according to the two approaches. There was little change in relative poverty until the late 1970s, while absolute poverty declined steadily in the early 1970s and then flattened out. It would seem that the lower size elasticity of the relative line dominates the increasing social security benefits of the early seventies which was driving the decline in absolute poverty.

We also note that while the relative poverty rate has declined by about one-sixth, the degree of poverty among poor elderly did not change. The poorness measure for the elderly stayed stable at about .3. There seems to be no marked difference in the depth as opposed to the extent of child versus elderly poverty.

Figure 4


RELATIVE AND ABSOLUTE POVERTY
AMONG THE AMERICAN ELDERLY
Poverty Rate
50
45
40
35
30
25
20
15
10
5
0
66
68
70
72
74
76
78
80
82
84
86
P = .5 * Median EI
US Poverty Line

Finally, consider the results of applying the defintion of a poverty line outlined above to the income surveys in the Luxembourg Income Study. Table 8 presents results for some thirteen countries; for five countries we have results for two survey years. The countries are listed in order of increasing poverty rates for the total population.

For the most part countries with high poverty rates for children also have high rates for elders. There is one striking exception. The United Kingdom has an average child poverty rate of 7.3% but a very high rate for elders -- 41.1%. Israel presents a similar pattern.

Table 8

Relative Poverty and Poorness in The LIS Countries for All Persons, Children and Persons over 64

	POVERTY RATE			POORNESS		
	TOTAL	CHILDREN	ELDERS	TOTAL	CHILDREN	ELDERS
Luxembourg 85	5.2	4.2	13.1	0.226	0.211	0.208
Germany 81	5.8	2.0	13.9	0.261	0.272	0.250
Germany 84	6.5	5.0	9.9	0.251	0.244	0.247
Switzerland 82	6.8	2.8	14.0	0.291	0.286	0.243
Netherlands 83	6.8	5.1	3.1	0.347	0.328	0.348
Sweden 81	5.7	3.8	3.3	0.278	0.263	0.171
Sweden 87	8.3	2.0	10.8	0.281	0.256	0.189
Norway 79	7.1	4.1	16.8	0.250	0.259	0.217
France 79	8.4	6.5	11.6	0.265	0.261	0.209
Italy 86	9.8	11.0	13.7	0.262	0.269	0.232
Israel 79	10.3	7.9	29.0	0.236	0.223	0.249
United Kingdom 79	12.1	7.3	41.1	0.225	0.226	0.211
Canada 81	13.1	14.0	22.5	0.278	0.280	0.235
Canada 87	12.3	13.8	11.9	0.279	0.269	0.223
Australia 81-82	13.0	13.8	22.4	0.264	0.273	0.202
Australia 85-86	13.9	14.3	24.1	0.271	0.281	0.216
United States 79	16.6	19.1	26.2	0.298	0.297	0.283
United States 86	18.2	23.4	22.2	0.302	0.308	0.270

The United States and Australia have high rates for both groups while Luxembourg, Germany, Switzerland, the Netherlands, and Norway have low rates for both. In Sweden we find a rather large change for the elderly -- from 3.3% poor in 1981 to 10.8% in 1986. But for children the rates are very low in both years. In Canada, elderly poverty has been cut in half between 1981 and 1987, giving it an elderly poverty rate about the same as in Sweden.

The poorness of the poor does not vary as much among these countries as does the rate. For the most part poorness among children and elders is about the same. To the extent there are differences it is that the elderly poor are not as badly off as are children who are poor. For example in Sweden poor children are almost fifty percent poorer than poor elders and in Australia they are about one-third poorer.

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Appendix: Percent Distribution of Family of Four Get Along Amounts by Year

Amount Needed	51	57	58	59	60	61	62	63	64	66	67	69
25	5	2	4	1	3	3	2	2	2	2	0	1
30	5	2	3	2	2	2	1	2	3	1	1	1
40	9	4	4	3	3	4	4	3	4	2	2	1
50	20	15	15	11	11	9	10	13	13	9	6	4
60	11	7	8	6	5	5	5	4	5	5	3	2
75	9	12	10	13	11	11	14	13	12	10	6	7
80	2	5	6	7	6	7	5	7	8	4	3	3
100	7	23	17	26	25	28	26	24	26	31	32	28
125	0	3	2	4	6	6	6	7	6	7	10	9
150	0	3	2	3	4	5	3	4	5	8	13	15
200	0	0	1	1	1	1	2	2	1	4	6	8
250	0	0	0	0	1	0	0	0	0	0	1	1
300	0	0	0	0	0	0	0	0	0	0	0	0
400	0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	0	0
up to 19	6	2	2	1	1	1	1	0	0	0	0	0
20	4	2	3	2	1	1	1	1	0	0	1	0
21-24	0	0	0	0	0	0	0	0	0	0	0	0
26-29	1	0	0	0	0	0	0	1	0	0	0	0
31-34	1	0	0	0	0	0	0	0	0	0	0	0
35	4	2	2	1	1	1	2	1	2	1	1	0
36-39	1	0	0	0	0	0	0	1	0	0	0	0
41-49	4	2	2	1	1	1	1	1	1	0	0	0
51-59	3	1	2	1	1	1	1	1	0	0	0	0
61-69	4	3	4	2	3	2	3	2	2	1	1	1
70	3	4	4	3	3	3	3	2	2	3	2	2
71-74	0	0	0	0	0	0	0	0	0	0	0	0
76-79	0	0	0	0	0	0	0	0	0	0	0	0
81-89	1	3	2	3	3	2	3	2	2	3	1	2
90	1	3	3	3	3	2	3	2	5	2	2	2
91-99	0	1	1	1	0	0	1	1	0	1	0	0
101-124	0	1	1	3	1	2	1	2	2	3	2	3
126-149	0	0	0	1	1	1	1	1	1	1	2	3
151-199	0	0	0	0	0	1	1	1	1	1	3	3
201-249	0	0	0	0	0	0	0	0	0	0	0	1
251-299	0	0	0	0	0	0	0	0	0	0	0	0
301-399	0	0	0	0	0	0	0	0	0	0	0	0
401-499	0	0	0	0	0	0	0	0	0	0	0	0
501-599	0	0	0	0	0	0	0	0	0	0	0	0
600	0	0	0	0	0	0	0	0	0	0	0	0
601-699	0	0	0	0	0	0	0	0	0	0	0	0
700	0	0	0	0	0	0	0	0	0	0	0	0
701-799	0	0	0	0	0	0	0	0	0	0	0	0
800	0	0	0	0	0	0	0	0	0	0	0	0
801-899	0	0	0	0	0	0	0	0	0	0	0	0
900	0	0	0	0	0	0	0	0	0	0	0	0
901 +	0	0	0	0	0	0	0	0	0	0	0	0
Mean	51	75	70	83	84	84	85	85	83	97	111	118
Median	50	75	70	80	80	80	80	80	80	100	100	100
Geometric Mean	46	68	62	75	74	75	77	77	76	88	101	107

Note: Top panel includes amounts given by 5% or more in a single year.

Appendix -- continued

Amount Needed	71	74	76	78	79	81	82	83	84	85	86
25	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0
40	1	1	1	0	0	0	0	0	0	0	0
50	3	2	1	0	0	0	0	0	0	0	0
60	1	1	0	1	1	0	0	0	0	0	0
75	4	2	1	0	0	0	0	0	0	0	0
80	2	1	1	0	0	0	0	0	0	0	0
100	24	14	10	7	6	3	3	2	2	2	2
125	9	6	4	3	2	1	1	1	0	0	0
150	19	21	19	14	11	6	5	5	4	3	5
200	13	24	23	29	23	21	18	18	17	16	14
250	4	6	10	14	14	16	13	15	11	12	8
300	2	4	7	12	14	17	19	19	18	20	18
400	1	2	2	4	6	11	12	13	12	14	16
500	0	1	1	2	3	7	8	9	11	12	14
up to 19	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0
21-24	0	0	0	0	0	0	0	0	0	0	0
26-29	0	0	0	0	0	0	0	0	0	0	0
31-34	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0
36-39	0	0	0	0	0	0	0	0	0	0	0
41-49	0	0	0	0	0	0	0	0	0	0	0
51-59	0	0	0	0	0	0	0	0	0	0	0
61-69	1	0	0	0	0	0	0	0	0	0	0
70	1	1	0	0	0	0	0	0	0	0	0
71-74	0	0	0	0	0	0	0	0	0	0	0
76-79	0	0	0	0	0	0	0	0	0	0	0
81-89	1	0	0	0	0	0	0	0	0	0	0
90	1	1	0	1	0	0	0	0	0	0	0
91-99	0	0	0	0	0	0	0	0	0	0	0
101-124	3	1	1	1	1	0	0	0	0	0	0
126-149	3	2	2	1	1	0	0	0	0	0	0
151-199	5	6	8	4	4	1	2	1	2	1	1
201-249	0	2	2	2	2	1	2	1	1	1	0
251-299	0	1	1	2	2	1	1	1	2	1	1
301-399	0	1	1	3	4	7	7	7	8	7	8
401-499	0	0	0	0	1	2	2	2	3	2	3
501-599	0	0	0	0	1	0	0	0	1	0	0
600	0	0	0	0	0	2	2	2	2	3	3
601-699	0	0	0	0	0	0	0	0	1	0	0
700	0	0	0	0	1	1	1	0	1	2	1
701-799	0	0	0	0	0	0	0	0	0	0	1
800	0	0	0	0	0	1	1	1	1	1	2
801-899	0	0	0	0	0	0	0	0	0	0	0
900	0	0	0	0	0	0	0	0	0	0	0
901 +	0	0	0	0	0	1	0	1	1	2	2
Mean	136	169	187	219	244	304	304	315	334	349	364
Median	125	150	175	200	200	275	300	300	300	300	350
Geometric Mean	122	152	170	200	217	273	275	287	301	314	329