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# Overlaps in Dimensions of Poverty

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## **Abstract**

The Poverty and Social Exclusion Survey of Britain made it possible first time to explore poverty using three different measures applied at the same time on the same sample. The measures were: lacking socially perceived necessities; being subjectively poor and having a relatively low income. These approaches are all commonly used to identify the poor and to measure poverty but rarely if ever in combination. In this article we have found that there is little overlap in the group of people defined as poor by these dimensions. There are reasons for this lack of overlap, connected to the reliability and validity of the different measures. However the people who are defined as living in poverty by different measures of poverty are different. This inevitably means that the policy response to poverty will be different depending on which measure is employed.

We have attempted to analyse overlap in two ways. First, by exploring the dimensions of poverty cumulatively, we have found that, the more dimensions people are poor on, the more they are unlike the non-poor and the poor on only one dimension, in their characteristics and in their social exclusion. Second, by treating particular dimensions as meriting more attention than others, we explored three permutations of this type and concluded that, while each permutation were more unlike the non-poor than those poor on a single dimension, they were not as unlike the non-poor as the cumulatively poor were. These results indicate that accumulation might be a better way of using overlapping measures of poverty than by giving priority to one dimension over another.

The implication of the paper is that it is not safe to rely on one measure of poverty – the results obtained are just not reliable enough. Surveys, such as the Family Resources Survey or the European Community Household Panel, which are used to monitor the prevalence of poverty, need to be adapted to enable results to be triangulated – to incorporate a wider range of poverty measures.

## **Introduction**

Poverty (if it means anything) is a *categorical* need – one that must be met for human beings to function. Poverty is also associated with all the major problems in Britain. Indeed there are strong reasons for suggesting (in the language of Beveridge's Giants) that we need to deal with want if we are to be successful in tackling ignorance, squalor, disease and, possibly, idleness.

Policy makers in Britain are now seeking to tackle poverty – it is the centre of the domestic agenda. Research on poverty is therefore an even more important

undertaking. For over a century social scientists have been trying to operationalise the concept of poverty in empirical research. Among the approaches they have used have been

- measuring income (and expenditure) and then comparing it with a budget standard (for example, Rowntree, 2000).
- measuring income (and expenditure) and then drawing a line on a distribution and treating a relative lack of income as poverty (for example, DWP, 2002a).
- Establishing a relative lack of certain items or activities which are necessary (for example, Mack and Lansley, 1985).
- Asking people whether they feel poor or deprived (for example, Townsend *et al.*, 1997).
- More recently attempts have begun to be made to operationalise the related concept of social exclusion (Gordon *et al.*, 2000; Burchardt, 2000; Hills, Le Grand and Piachaud, 2002).

The income-based approaches to measuring poverty have been dominant for most of the period in most countries and internationally. Following Townsend's (1979) the use of indicators of deprivation began to emerge and were developed particularly in the Breadline Britain studies (Mack and Lansley, 1985; Gordon and Pantazis, 1997; Gordon *et al.*, 2000). In comparison relatively little use has been made of subjective measures in official or academic research.

For practical reasons much of the empirical research on poverty has used one measure at a time. Townsend (1979) was an early exception, comparing the results of his relative deprivation index with equivalent income. The first two Breadline Britain Surveys did not collect income data. The Family Expenditure Surveys and the Family Resources Surveys, the main vehicles for poverty research in the UK, do not collect data on a lack of necessities and subjective poverty. However the European Community Household Panel survey began to collect data on a selection of social indicators as well as income and, particularly in Ireland, this has been used to explore the overlap between income and deprivation (Nolan and Whelan 1996). Also the work evaluating the Irish poverty strategy has involved combining measures of poverty (Layte, Nolan and Whelan, 2000). Statistics Netherlands's analysis of the European Community Household Panel Survey has compared EU poverty on more than one dimension at a time (Dirven *et al.*, 2000). In New Zealand (Perry, 2003) has explored the relationship between income poverty and outcome measures.

Part of the motivation for this work is that those of us who do research on poverty and social security, until recently anyway, have found it difficult to convince the policy community of the urgency of the problem of poverty. The finding that 34 per cent of children are living in families with equivalent income less than 60 per cent of the contemporary median after housing costs and including the self employed in 2000/01 has somehow lacked moral force,

persuasive power, credibility and probably also comprehension! Though one can be critical of the detail (Bradshaw, 2001) we applaud the efforts now being made by the Department of Work and Pensions to establish a set of indicators of poverty (in the *Opportunity for All* reports (DWP, 2002b) and in the equivalent in Scotland, Wales and Northern Ireland). At the time of writing the DWP (2002c) are in the process of reviewing the headline indicator of child poverty based on an income measure, and among the options they are considering is a combination of income and social indicators following the Irish example. The EU has also recently been through a process of developing Indicators of Social Inclusion as part of the National Action Plan process (Atkinson *et al.*, 2002). Work has been progressing on the overlaps between poverty measures in New Zealand (Perry, 2003).

This article is a contribution to that activity. It is an exploration of different measures of poverty made possible by the Survey of Poverty and Social Exclusion in Britain (Gordon *et al.*, 2000). This survey was a national follow-up survey in 1999 of about 1300 households who were respondents to the 1998/99 General Household Survey.

The hypothesis is that at the heart of notion of poverty, where the three measures of poverty overlap, it is more likely to be validly prescribed. Those in overlapping poverty have different socio-economic characteristics to those identified as poor by one measure alone. They are likely to be experiencing a harsher degree of poverty than those poor on any one of the measures. They are therefore perhaps a priority for policy.

First we describe the measures.

### **Deprivation**

Deprivation is represented here by a lack of socially perceived necessities. This is based on the social indicator methodology pioneered by Townsend (1979) and developed especially by Mack and Lansley (1993) and Gordon and Pantazis (1997). For the PSE survey we developed a new and more elaborate index than previously (including a separate index for children). We established the proportion of the general population who considered an item was a necessity, using questions in the Office of National Statistics Omnibus Survey that preceded the PSE survey. Only items and activities that 50 per cent or more of the general population considered were necessities were included in the index. For the PSE survey, Gordon undertook some work on the validity of the index (and excluded some items, which did not contribute significantly). He also identified a threshold of lacking two or more items *and* having a low income as the PSE poverty threshold. In this paper we are covering low income in other ways so we have counted the proportion of households lacking four or more adult necessities, because they cannot afford them, as necessities poor. The choice of four items as the threshold was made in order to match as far as possible the proportion defined as poor by the other two measures.

### Subjective poverty

Those who say that they feel poor represent subjective poverty here. In the PSE survey we used three sets of questions to measure subjective poverty, including an attempt to operationalise the *Absolute* and *Overall* notions of poverty adopted by the UN World Summit on Social Development in Copenhagen in 1995 (UN 1995). But this paper uses the results obtained from the following questions:

How many pounds a week, after tax, do you think are necessary to keep a household such as the one you live in, out of poverty?

How far above or below that level would you say your household is?

A lot above that level of income

A little above

About the same

A little below

A lot below that level of income

Don't know

Those a little or a lot below the level of income were defined as subjectively poor.

### Income poverty

Income poverty is represented here by the measure that has become in the UK (DWP, 2002a) and the EU (Atkinson *et al.*, 2002) the conventional measure of relative poverty – those households with net equivalent household income less than 60 per cent of the median. In this case the measure is before housing costs on the grounds that an after housing costs measure cannot be derived from the General Household Survey. The PSE survey employed a variety of equivalence scales, including one created especially, based on budget standards research. But for this paper we have used the modified OECD scale that is now adopted in most comparative work (Atkinson *et al.*, 2002).

### Poverty overlaps

Table 1 shows the proportion of the sample defined as poor by each of the dimensions. The proportion poor by each dimension is fairly similar – between 17 and 20 per cent.

However it can be seen in Table 2 that while 33 per cent are poor on at least one dimension, only 5.7 per cent are poor on all three measures simultaneously. These results indicate a considerable lack of overlap between measures that have been, and still are, used to represent poverty. If the measures were completely uncorrelated one would expect to obtain a distribution that is quite close to the one obtained. The actual and predicted proportions are given in the table.

The logistic regression in Table 3 shows that the odds of those poor on one dimension being poor on each of the other dimensions is statistically significantly higher (than 1) for all dimensions. However there are differences between the

TABLE 1. Poverty rate by each measure of poverty.

Poverty measure	% poor
Deprivation (lacking 4 + socially perceived necessities)	17.2
Subjective Poverty (subjective measure)	19.6
Income Poverty (equivalent income before housing costs less than 60% median)	18.8

TABLE 2. Number of measures on which respondents are poor.

	% poor	
	Actual	Expected
Poor on at least one	32.9	32.9
Poor on a least two	16.1	10.9
Poor on at least three	5.7	3.6

Note: Expected under hypothesis of no correlation between variables.

TABLE 3. Odds of being poor on the other dimensions of poverty.

	Necessities poor	Subjectively poor	Income poor
<b>Necessities poor</b>		1.00	1.00
		13.40***	2.32**
<b>Subjectively poor</b>	1.00		1.00
	13.40***		4.30***
<b>Income poor</b>	1.00	1.00	
	2.32**	4.30***	

Note: \* < 0.05; \*\*\* < 0.01; \*\*\*\* < 0.001.

measures. In the case of the necessities poor (deprived), the odds of being income poor are comparatively small after subjective poverty is taken into account. This also holds for subjective poverty – after necessities poverty has been taken into account the odds of being income poor are relatively small. For the income poor the odds of being poor subjectively are higher than being necessities poor.

What are the reasons for this lack of coincidence between those found to be poor by each dimension?

- A small lack of overlap is inevitable given the different proportions identified as poor by each of the measures used.
- Then there are cases in transition. For example there are households who have recently retired or lost a worker who are now currently income poor but not (yet) lacking necessities (deprived) – they still have the assets acquired in better times. In contrast there are households who for example have recently entered employment who are not now income poor but who have

not (yet) been able to gather together the necessities that they lacked while unemployed.

- Then there is ‘false consciousness’. In the subjective measure, people may claim to be in poverty when they are not (by other dimensions). Or people may not feel they are in poverty perhaps because they have limited understanding of relative living standards. As we shall see in Table 6, 5 per cent of the sample said that they felt poor without being poor on any of the other dimensions and 1.8 per cent did not feel poor despite being poor on both the other dimensions.
- Another kind of false consciousness – due to low aspirations – can occur in relation to the deprivation measure. Some respondents will say that they lack necessities because they cannot afford them but in reality it is because they do not want them – it is not a high priority in their budgets. The democratic majority view is that they should want them. Pensioners are more likely than non-pensioners to say that they ‘don’t have and don’t want’ necessities and (as we shall see) they are less likely to be defined as poor on the deprivation dimension.
- Then there are technical explanations to do with the measures themselves. One of these, which is likely to be important, is the fact that the GHS income variable is before housing costs. At a given before housing costs equivalent income level, households with high housing costs are more likely to feel poor and to be deprived than households with low housing costs. In our analysis of the PSE survey we found that London is a region with a comparatively low-income poverty rate but a comparatively high deprivation rate. This may be due to the impact of housing costs.
- Then perceptions of poverty may vary according to how resources are distributed within the household. Thus, for example, a female non-breadwinner respondent may feel poor because her breadwinner partner does not share his non-poor income with her.

So there are a number of reasonable explanations for the lack of overlap in the households defined as poor by each of our dimensions. But how could we use these dimensions to identify a group who can be reliably and validly described as poor?

There seem to us to be two approaches. One is to take a straight cumulative approach. The other is to give priority (merit) to one measure over another. We explore each of these approaches in turn.

### **Cumulative approach**

The cumulative approach assumes that a person who is poor on all three dimensions is more likely to be poor than a person who is poor on only one of the dimensions. Also, a person who is poor on two is more likely to be in poverty than a person poor on one, and less likely than a person poor on three. The more

components that define a person as poor the more likely they are to be in poverty. Following these assumptions deprivation poverty, subjective poverty, and having a low income can be treated as ordinal dimensions.

One argument in support of this approach is that we cannot rely on a single measure if we are in search of poverty. To do so is to rely too much on the reliability and validity of the measure (such as income after the housing costs, the issue discussed above). Using three measures avoids being misled by such errors.

Another argument is that the results are not only more reliable but poverty found by more than one dimension is also more severe. For example having a poverty income is worse if you also do not have the assets (to fall back on), and even worse if you also feel poor. Or if you lack necessities but do not feel poor is that as bad as lacking (the same) necessities and feeling poor?

There is no *a priori* way of deciding which approach is best. However we attempt a tentative exploration using two sets of criteria.

First by examining the characteristics of the poor as measured using each of the single dimensions and the cumulative dimension and comparing those characteristics with the non-poor. The purpose is to discover whether the cumulative dimension is better than the single dimension at differentiating between the poor and non-poor. This is tackled in Table 4.

The first thing to note in Table 4 is that each of the poverty dimensions produces a poverty population with different characteristics. Thus for example 36 per cent of the low income poor are retired compared to 17 per cent of the necessities poor. In contrast 25 per cent of the subjectively poor are couples with children compared with only 16 per cent of low-income poor.

The characteristics of the non-poor are found in the right-hand column of the table. In general those who are cumulatively poor on all three of the dimensions are a group whose characteristics are more unlike the non-poor than any of the single dimension groups. The cumulative group are more likely than the other poverty groups to be women, lone parents, large families and to have no workers in the household.

Second, we consider how social exclusion is associated with each of the dimensions of poverty. Social exclusion was operationalised in three ways in the PSE survey – as exclusion from the labour market; as exclusion from services; and as exclusion from social relations. For the purposes of this analysis we have reduced the complexity of the PSE indicators of social exclusion to eight dimensions. It can be seen in Table 5 that the cumulatively poor are more likely than the other poor groups and the non-poor to be labour market excluded, lacking two or more services, unable to participate in three or more activities, and be confined (by fear of going out). However they are no more likely than the necessities poor to have no contact with family or friends daily or to be disengaged. They are less likely than the non-poor to lack support in four areas, indeed the highest proportion is found among the non-poor. We conclude from

TABLE 4. Who are the poor?

	Necessities poor N = 264	Subjective poor N = 261	Low income poor N = 260	Poor on all 3 dimensions N = 69	Poor on 0 (not poor) N = 802
<b>Gender</b>					
Male	41***	42**	37***	32**	52*
Female	59	58	63	68	48
<b>Family type</b>					
Single	21***	22***	31***	25***	14***
Couple no children	21	24	26	16	36
Couple with children	26	25	16	20	26
Lone parent	13	12	13	26	2
Other	19	17	15	13	23
<b>Number of children in household</b>					
0	53***	62***	66	50	72*
1	18	19	14	22	11
2	15	11	12	15	13
3+	14	8	8	13	5
<b>Household employment status</b>					
Workers	51***	44***	31***	24***	77***
No workers	33	35	33	62	6
Retired	17	21	36	15	17

Note: \* < 0.05 \*\* < 0.01; \*\*\* < 0.001 (significance level of chi square each group against the rest).

TABLE 5. Poor by various dimensions and social exclusion.

	Necessities poor	Subjective poor	Low income poor	Poor on all three dimensions	Not poor (poor on 0)
Labour market excluded %	31	33	30	60	4
Service excluded <i>Lacking two or more services %</i>	46	37	32	50	19
Exclusion from social relations <i>Unable to participate in three or more activities %</i>	81	56	40	84	6
<i>No contact with family or friends daily %</i>	13	12	10	13	12
<i>Lack of support in four areas %</i>	19	20	21	15	23
<i>Disengaged from all activities %</i>	22	17	18	19	8
<i>Confined %</i>	75	60	43	77	17

TABLE 6. Poverty rates by permutations of dimensions.

Group number	Necessities poor	Subjectively poor	Low income poor	Poverty rate
1	yes	yes	yes	5.6
2	yes	yes	no	5.5
3	yes	no	no	4.0
4	no	yes	yes	3.4
5	no	no	yes	7.7
6	no	yes	no	5.0
7	yes	no	yes	1.8
8	no	no	no	67.0

these results that the cumulative method has something in its favour. Those who are defined as poor on all three of the dimensions are different from those defined as poor on only one of the dimensions and they are also more unlike those who are not poor.

### Merit arguments

But let us turn to consider the arguments based on merit – that one poverty dimension has more merit than another. There are good reasons to think that this might be true for technical reasons. For example it is possible to build a strong assault on the reliability of income measures – household income is subject to unreliable recall, is out of date, fluctuates, equivalence scales are highly contestable, the 60 per cent of median threshold is totally arbitrary, income assumes equal distribution within the household and so on.

But one measure of poverty might have more merit for more substantive reasons. Take some examples:

- Can a person be defined as poor if s/he does not feel poor? Feeling poor may be a necessary condition if not a sufficient condition. So anyone who is core poor may have to be poor on the subjective dimension.
- Lacking four socially perceived necessities is a direct indicator of poverty, whereas having a low income is (merely) an indirect measure.
- Current income poverty is not a strong enough indicator of actual deprivation – because of the transitions discussed above.

Again there appears to be a good deal to be said for some of these arguments. But how are policy makers to decide which permutation is poverty. Table 6 presents all possible permutations in a matrix with the proportions against each permutation. The largest groups (apart from the non-poor) are the income poor but not poor on any of the other dimensions (7.7 per cent), the poor on all dimensions (5.6 per cent), the necessities and subjectively poor (5.5 per cent) and the subjectively poor but not poor on any other dimension (5.0 per cent). Which

TABLE 7. Characteristics of the poor.

	Necessities and subjective poor N = 67	Necessities and income poor N = 90	Subjective poor + 1 N = 176	Poor on all 3 dimensions N = 69	Poor on 0 (not poor) N = 802
<b>Gender</b>					
Male	37*	34*	35***	32**	52*
Female	63	66	65	68	48
<b>Family type</b>					
Single	13	26***	22***	25***	14***
Couple no children	27	17	25	16	36
Couple with children	36	20	24	20	26
Lone parent	9	25	16	26	2
Other	15	12	13	13	23
<b>Number of children in household</b>					
0	51	52	57***	50	72*
1	30	19	23	22	11
2	13	17	12	15	13
3+	6	12	9	13	5
<b>Household Employment Status</b>					
Workers	69	26***	42***	24***	77***
No workers	19	56	39	62	6
Retired	12	19	20	15	17

Note: \* < 0.05 \*\* < 0.01; \*\*\* < 0.001 (significance level of chi square each group against the rest).

of these permutations are most likely to be in poverty? We explored the following three permutations

1. Given the problems with income discussed above we take Group 2 – those who are not poor on income but are poor on lack of necessities and subjectively = 5.5 per cent.
2. Given the problem of false consciousness we take those who are necessities poor and are income poor but not necessarily subjectively poor. Groups 1 and 7 = 7.4 per cent.
3. Following the logic of subjective poverty being a necessary but not sufficient condition we include all permutation cases feeling poor, if they are also poor on one other measure. Groups 1, 2 and 4 = 14.5 per cent.

It can be seen in Table 7 that the characteristics of the poor, defined by our three selected merit groups, are in general not as different from the non-poor as the cumulatively poor. The cumulative group are more likely than the other poor groups to be female, lone parents, large families and to have no one employed.

On the social exclusion dimensions in Table 8 the cumulative poor group is more likely to be labour market excluded, to be lacking two or more services and

TABLE 8. Poor by various dimensions and social.

	Necessities and subjective poor	Necessities and income poor	Subjective poor + 1	Poor on all three dimensions	Not Poor (poor on 0)
Labour market excluded %	18	54	37	60	4
Service excluded <i>Lacking two or more services %</i>	40	47	43	50	19
Exclusion from social relations <i>Unable to participate in three or more activities %</i>	84	81	71	84	6
<i>No contact with family or friends daily %</i>	8	12	9	13	12
<i>Lack of support in four areas %</i>	15	18	15	15	23
<i>Disengaged from all activities %</i>	24	20	19	19	8
<i>Confined %</i>	79	71	67	77	17

to have no contact with family and friends – than the merit groups. They are just as likely as the necessities/subjective poor to be unable to participate in three or more activities, to lack support in four or more areas and to be confined. They are less likely than the merit poor to be disengaged.

### Conclusion

In this article we have explored the overlap between three dimensions of poverty. We have found that there is strikingly little overlap in the group of people defined as poor by three dimensions that are generally used to measure poverty. There are reasons for this lack of overlap, connected to the reliability and validity of the different measures. However the people who are defined as living in poverty by different measures of poverty are different. This inevitably means that the policy response to poverty will be different depending on which measure is employed. For example in Table 4 we see that the cumulatively poor are more likely than the income poor to be females, lone parents and people not in the work force. The cumulatively poor are less likely to be retirement pensioners.

In the face of the evidence of this lack of overlap of poverty dimensions, policy makers may well ask the research community to identify who are the real poor. We have approached an answer to this question by analysing overlap in two ways. First by exploring the accumulation of dimensions of poverty. We have found that the more dimensions that people are poor on, the more unlike the

non-poor and the poor on only one dimension they are – in their characteristics and in their social exclusion. Second by treating particular dimensions as meriting more attention than others. We explored three permutations of this type and concluded that, while they were more unlike the non-poor than those poor on a single dimension, they were not as unlike the non-poor as the cumulatively poor were. These results indicate that the cumulatively poor might be a more reliable way of identifying those who are poor, as well as possibly discriminating between the poor and the very poor.

In the UK the *Opportunities for All* reports are employing a variety of measures to monitor the success of the Government's anti-poverty strategy – but not as they apply to the same household. Following the conclusion of the consultation on *Measuring Poverty* (DWP 2002c), there may be efforts to combine low income and material deprivation but including a subjective measure was not considered as an option.

At present it is impossible to use the overlapping measures we have used here with the data sets that are routinely produced in the UK or internationally. The main data set used to estimate poverty rates in the UK, the Family Resources Survey (FRS), only covers the income poverty explored here, though there are some data on access to consumer goods. The result of this is that the Household Below Average Income Statistics are relying entirely on a headline measure based on income poverty that has limitations in both reliability and validity. The FRS could be adapted to include the lack of socially perceived necessities and subjective dimensions that were included in the PSE Survey, so could the other key national data sets, such as the British Household Panel Survey or the Scottish Household Panel. The Survey of Income and Living Conditions (SILC) the successor to the European Community Household Panel Survey could also incorporate these dimensions. Future studies of poverty and of the extent to which poverty is being relieved should present results using a combination of measures. Triangulating results is a more secure basis for drawing conclusions than using single dimensions.

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