Summary of the Young Lives Conceptual Framework

Young Lives
An International Study of Childhood Poverty

1. Introduction

The first phase (2000-2003) of Young Lives was supported by the UK Department for International Development (DFID) with the purpose 'to measure and find out about what happens to children born into poverty in the millennium'. This purpose is to be satisfied through meeting four objectives:

- Develop methodologies and instruments for conducting panel surveys of children and poverty which can be replicated in a range of developing country situations;
- Collect, analyse, report, archive and maintain the results of these surveys;
- Strengthen capacity for such research in selected developing country institutions; and
- Disseminate and publicise the research and its results to a wide range of audiences, including making raw data available as appropriate.

This paper sets out the conceptual framework that underpins the project and was developed prior to the design of the data collection instruments in Phase 1.1 As Young Lives is a 15 year project, the conceptual framework will be reviewed periodically.

Section 2 gives a brief overview of approaches to conceptualising childhood and the concept of childhood adopted by Young Lives. Section 3 considers what is meant by childhood poverty, and the reasons why it should be a focus of study in its own right. Section 4 outlines the framework for analysing the causes and consequences of childhood poverty and the reasoning behind it.

2. Conceptualising Childhood

A key issue raised in the literature on childhood is that of cross-cultural similarity and variability in the meanings and experiences of childhood (James, Jenks and Prout, 1998). Theoretical analysis can set up a mutually exclusive relationship between the global and the local (i.e. the global versus the local). This suggests that researchers must somehow chose between a global model of childhood that fails to account for any socio-cultural differences, or a local model of childhood that denies any universal commonalities. However, for those engaged in large-scale cross-cultural studies, such as Young Lives, the challenge is more one of finding ways to encompass the universal aspects of childhood, whilst allowing for socio-cultural difference where it is significant.

Young Lives is not the first study to take a holistic approach to childhood and make comparisons across countries and cultures. Whilst Young Lives looks specifically at childhood poverty, the European project 'Childhood as a Social Phenomenon' looked at general sociological aspects of childhood, (such as children's use of time and space, institutional attitudes towards children and gender differences) across 16 countries. In response to those critics who claimed that the project should refer to 'childhoods' and thus better capture the complex, plural realities of

[1] 'Practical Guidelines and Lessons Learned from Young Lives' discusses the process of developing the conceptual framework at some length and Document 9 has examples of the flow charts that were used. The Young Lives Guidelines and Technical Documents package are available on the website www.younglives.org.uk

children's worlds, the project director, Qvortrup explains the risk of allowing acknowledgement of differences to blind us to global aspects of childhood,

> Who can possibly claim there to be only one childhood when it is so obvious that children lead their life under a variety of conditions, depending not least on the socio-economic background of their parental home? On the other hand this view would, if followed to the end, constitute an insurmountable obstacle to any generalised insight, because it indicates the preponderance of what is unique over what is common. (1994, p.5)

In a similar vein, rather than allow cultural difference to become an 'insurmountable obstacle' to drawing any general conclusions about the causes and consequences of childhood poverty in developing countries, Young Lives focuses on those universal aspects of childhood well-being and development that have been shown to be suitable for meaningful comparison across cultures.

In approaching childhood as a predominantly global phenomenon, Young Lives draws on the concept of a global child promoted by human rights. The 1989 United Nations Convention on the Rights of the Child (CRC) has created a universal system of rights that apply to all children under the themes of survival, protection, development and participation. A series of rights that apply to all children regardless of space and time suggests points of commonality in all childhoods.

Linked to the four key CRC themes, it is possible to identify universal spaces of childhood, namely home, school and community (and in some contexts, work) that have an impact upon a child's life and can shape the focus of a comparative study. The meanings and organisation of these spaces will differ not only from country to country, but also from community to community within a country and even for different individuals within the same social space, for example, a child's gender, ethnicity, and religion will shape his or her experiences. The nature of home for a child living on the street will be very different to that of a child living in an extended family. Similarly, what constitutes 'school' for a child living in a remote rural community will be very different to the experience of a middle-class child in an urban area. However, whilst the contextualised nature of children's individual experiences needs to be acknowledged, meaningful patterns of common experiences, outcomes and motivations can still be identified. The World Bank 'Voices of the Poor' study (Narayan, 2001) illustrates how common views and experiences can be found amongst poor adults and children living in very different conditions.

In turn, common spaces can be linked to common experiences. For example, although there are wide cultural variations across societies in approaches to parenting, all societies have processes of socialisation. Levine (1998) points out that it is possible to identify key elements in cultural models of childcare practices, regardless of where they take place – 1) moral direction 2) pragmatic design and 3) set of conventional scripts for action - which can be used to focus cross-cultural work on parenting. Therefore, accepting the importance of culture in shaping the meaning and experience of childhood does not necessarily lead one to the extreme position where all childhoods are irrevocably unique and infinitely variable. It is possible to identify common frameworks of inputs through which individual childhoods are shaped.

From a biological and psychological perspective, all societies recognise something equivalent to infancy and childhood as stages within the human lifecourse, and there are quantifiable inputs and indicators of child well-being that can be meaningfully compared across cultures. The five quantitative child well-being outcomes discussed in Section 4, draw on these indicators. Childhood is the period of human growth and development divided into universal and quantifiable stages. Each stage can be identified by biological and behavioural characteristics that relate to measurable phases in body growth, brain development, dentition, and reproductive development (Bogin,1998) A shared biological process of maturation across cultures has led to the development of a series of demographic and anthropometric indicators of child well-being that

can be meaningfully compared globally. (Panter-Brick,1998). Our understanding of cognitive maturation during childhood has also developed to the point where there are sets of cognitive, communicative, emotional and social capacities associated with each stage in childhood (Panter-Brick, 1998). There has been some criticism of a universal process of human development that fails to account for cultural difference. It is argued that the gold standards against which a child's development can be compared are drawn from a limited, often Western understanding of childhood (Burman, 1994). However, rather than use this as a reason for not using gold standards, an alternative approach is to ensure that findings are not simply interpreted with reference to the gold standard but are also interpreted with reference to the local context. Also, any research should allow for locally significant aspects and values of childhood to be incorporated into the study wherever possible/necessary.

It is inevitable that in an international study that wishes to make meaningful comparisons across a wide range of issues and to generate findings to inform policy, some of the local complexity of childhood experiences will be lost in favour of highlighting commonality. Therefore, whilst Young Lives recognises that responsibilities, characteristics and meanings attached to childhood will differ from culture to culture, local cultural aspects of childhood will only be examined in so far as global comparisons need to be contextualised in order to be fully understood. The research methods used reflect this approach to conceptualising childhood. Core questionnaires for global use are adapted to the local environment through the addition of country-specific questions and modules. Results are interpreted with reference to the country- and community- contexts and more focused thematic studies will allow a greater exploration of the importance of cultural values in determining child well-being wherever appropriate.

3. The Importance of Looking at Poverty in Childhood

By following the lives of 8000 children over 15 years, the key aim of Young Lives is to deepen our understanding of the causes and consequences of childhood poverty. Before discussing the project's approach to analysing the dynamics of childhood poverty, it is necessary to outline why it is important to focus on children's experiences of poverty.

What is Childhood Poverty?

Young Lives understands poverty to be a multi-dimensional phenomenon. Poverty cannot be understood in purely material terms as lack of income, expenditure or consumption, but encompasses a broader range of both quantitative and qualitative deprivations. Drawing on the DFID livelihoods framework (www.livelihoods.org) Young Lives assesses poverty based on access to the five types of capital defined in the framework:

- The adequacy of income, assets and other forms of financial capital to sustain the household
- Levels of health, education, skills
- The quality of one's environment (e.g. housing, infrastructure, access to services, personal safety)
- Social connectedness both at a household level and within the wider community
- Access to natural resources (mainly rural and peri-urban areas)

When households are deficient within any of these areas, they are likely to encounter reduced livelihood options, which in turn reduces the household's capital assets further in a cycle of poverty.

Based on this framework, childhood poverty means growing up without access to sufficient financial and natural resources, health services, education, supportive family and community structures, and safe environments to ensure survival, development and quality of life.

This definition raises the question of what, if anything, is different between poverty experienced by children and poverty experienced by adults? Surely, all people, regardless of age need access to these types of assets in order to avoid poverty? A key difference is the nature of access. As explained in Section 2, childhood begins with a state of complete dependency followed by a process of development and growth that is accompanied by increasing independence from the family unit. Therefore, a child's access to resources is mediated by the household, especially in early and middle childhood when dependency is greater. Whilst access to the five types of capital in the livelihoods framework is considered positive because in theory it leads to access to sustainable livelihoods for those of working age, positive outcomes for a child living in that household will clearly not be indicated by his/her access to livelihoods or direct access to financial resources. Therefore, we need to include some measurements of well-being related to children's lives to ensure that a livelihoods framework is sufficiently sensitive to poverty as experienced by children.

Young Lives draws on the 1989 Convention on the Rights of the Child (CRC), which identifies the key areas of rights as follows;

- Survival (adequate living conditions and health care)
- Protection (freedom from exploitation, corruption and abuse and access to the justice system: perceptions of security and safety of living environment)
- Development (Education, play and leisure)
- Participation (Freedom to express opinions, the extent to which children feel their opinions are taken into account, extent to which they feel they have control over their lives and active role in society)

As discussed in Section 2, what sets childhood apart from adulthood is the process of growth and development, vulnerability and the related state of dependence, and the status of being 'incomplete adults' or 'invisible citizens'. By comparing the elements of the livelihoods framework and the CRC, it becomes clear that is it these differences between adulthood and childhood that distinguish childhood poverty from poverty experienced by adults. Therefore, what sets childhood poverty apart from poverty in general is a focus on access to spaces that facilitate development i.e. education, play and leisure, a focus on protection in the various spaces children inhabit to limit their vulnerability, and a focus on the importance of recognising children as citizens in their own right as they are very often conceptualised as passive, 'incomplete' adults without agency.

Why Study Childhood Poverty?

The sheer number of children living in poverty identifies childhood poverty as a phenomenon worthy of greater analysis. UNICEF (2000) estimates that 600 million children are growing up in poverty, and people under the age of 15 constitute between one third and a half of developing country populations. For example, in Ethiopia, 49 per cent of the population is aged below 15, in Peru, 35 per cent and in Vietnam, 40 per cent. Therefore, addressing childhood poverty should be central to any poverty reduction strategy.

Childhood and children are socially constructed as a group apart from adults, yet assumptions regarding children do not always reflect the reality of children's lives. Children's experiences of poverty are different to reasons discussed above, and, therefore, policy makers that wish to

target the needs of children effectively, should base policy interventions on empirical evidence of children's experiences of poverty rather than assumptions. The need to conduct research into poverty that focuses on children's specific needs is evident.

One of the most cited reasons for focusing on children living in poverty is an understanding that deprivation in childhood has long-term consequences for mental, emotional and physical health in later life. Therefore, childhood is seen as a transitional phase when investment in development can reap benefits for society in the future by creating productive adults. There are a couple of problems with this justification for focusing on childhood poverty.

Firstly, such an approach reduces children to nascent human capital where investment now leads to economic gains later. With this perspective on childhood poverty, there is a tendency to only focus on those inputs that are directly related to producing healthy adults capable of contributing to a country's development i.e. health, nutrition and education. Childhood is not just a precursor to adulthood and somehow a lesser experience. As childhood is a 'lived' experience, child welfare should be seen as an end in itself, and research and anti-poverty measures should take into account things that matter directly to children.

Young Lives recognises the agency of children and will incorporate methods at later stages that allow the study of childhood agency at a local level and give children a voice in the research process. The importance of ethnographic work in deepening our understanding of the role children's agency plays in children's experiences of poverty can be seen in Iverson's (2002) work, which illustrates how children make independent decisions regarding migration and work rather than simply following adults

Secondly, although there is empirical evidence that supports the assertion that deprivation in childhood has an impact upon capacities and access to adequate resources in adulthood, such linkages run the risk of being overly deterministic. Yaqub (2002, p.1088) argues that there are '… developmental sensitive periods, when certain types of damage to functionings can – but not always- result from childhood poverty, and some – but not all – may be permanent.' Yaqub concludes that damage from childhood poverty can be resisted or reversed both during childhood and in adulthood, and as the individual gets closer to biological maturity, behavioural as opposed to biological mechanisms play a greater role in altering developmental trajectories. Therefore, children are not simply passive recipients of developmental inputs and socialising processes that permit them to grow and be moulded into adults. What this means for a study that looks at the causes and consequences of poverty throughout childhood, is that children's agency in responses to poverty must be accounted for.

The tendency to overlook children as individuals in their own right and see them more as lesser members of a household has led to a lack of detailed information about the reality of children's lives. As mentioned earlier, well-being in early childhood is a sensitive indicator of poor environments, and therefore, there has been a lot of work that focuses on children between the ages of 0 and 1 (infants) and 1-5 (young children). However, there has been relatively little work in comparison on children from ages 5 to15 (Panter-Brick, 1998).

Qvortrup (1994) highlights the fact that there is a lack of coherent statistical information on children, as information regarding children is usually extrapolated from household data. Therefore, children's access to resources and levels of consumption are defined through the household's resources and adult levels of consumption. There are both quantitative and qualitative limitations with this approach. White and Masset (2002) show that calculating child consumption as a proportion of that of an adult male fails to capture patterns of intra-household allocation and can lead to the miscalculation of the numbers of children living in poverty. Using the household as the unit through which to analyse childhood poverty also runs the risk of

assuming that all households consider child welfare of equal importance and therefore, that all children will benefit in the same way. Research that has looked at women's experiences within the household has shown that there are often gender disparities amongst adults, with women often eating least, having less control over household resources and being less likely to spend money for their own benefit (see, for example, Mehta and Shah, 2003, p. 503). Households can be spaces of abuse and exploitation for children and household data cannot capture this adequately. As with gender and age[2] disparities in adults' access to household resources, not all children will necessarily benefit equally within a single household; certain children may be disadvantaged due to certain characteristics. Therefore, girl children may be less likely to be enrolled into post-primary education than their brothers or may be more likely to be engaged in household chores in some communities. Children with disabilities may be excluded from family social activities. Stepchildren may be at greater risk of abuse. The other key limitation of extrapolating information about children from general household data is that children are perceived as passive consumers of resources rather than individuals who actively contribute to the household in a number of ways as they get older e.g. making a financial contribution through work in and outside the household, caring for younger siblings, and doing domestic work.

[2] For a discussion of the relationship between poverty and old-age, see Barrientos et al. (2003)

4. The Young Lives Framework for Studying Childhood Poverty

Having explained the concept of childhood adopted by Young Lives and the reasons why a study of childhood poverty is important, this section discusses the conceptual framework that underpins the Young Lives approach to studying the causes and consequences of childhood poverty over time.

The starting point for developing the framework is to identify the output variables Young Lives is interested in, namely, how child welfare is being measured. This is discussed in 3.1. Then, in 3.2, in order to explain variations in these welfare outcomes, the framework defines a range of factors at micro-, meso- and macro- levels that potentially influence child welfare outcomes.

4.1 Young Lives Child Welfare Outcomes

The starting point for developing the framework is the output variables that are indicative of the welfare status of the child. Young Lives understands childhood poverty to be related to, but different from adult poverty, which has implications for the type of data collected. Therefore, it is important that child welfare measures include things that matter directly to children and do not simply reproduce adult poverty indicators. The outcomes are related to the four themes identified under the CRC: survival, development, protection and participation.

Young Lives will gather information on six child-specific outcomes:

- Outcome 1: Nutritional status
- Outcome 2: Physical morbidity
- Outcome 3: Mental morbidity
- Outcome 4: Life skills (literacy, numeracy, work skills etc)
- Outcome 5: Developmental stage for age
- Outcome 6: Perceptions of well-being and life chances

Outcomes 1 and 2 (nutritional status and physical morbidity) relate to the child rights area of survival. Health indicators, such as nutrition and physical morbidity are commonly recognised indicators of child welfare. For example, of the 16 UK child-poverty indicators two relate directly to the health of the child (see Appendix 1, Table A.1.). Health indicators are well developed: Living Standards Measurement-type surveys ask questions on illness and treatment in the previous two weeks3 and Demographic and Health surveys ask about diarrhoea and other illnesses.

Mental health, outcome 3, is an important indicator of child welfare and an important part of any multi-dimensional child specific poverty measure. However, little work has been done comparing child mental health across a range of developing countries. The prevalence of child psychiatric disorders in the developed world is 10-20%, but in the developing word the prevalence may be higher. Little is known about the extent to which risk factors identified in the developed world apply in developing countries (Hackett and Hackett 1999). There is no consistent definition of mental health and therefore no gold standard way of measuring it.

[3] See, for example, the Vietnam Living Standards Survey

Outcomes 4 and 5 (life skills and developmental stage for age) relate to the child rights area of development. Education, like health, is a commonly recognised indicator of child welfare. Questions on educational attainment and attendance (and reasons for non-attendance) are common. Measures of cognitive development are less common in developing countries, although there are exceptions. For example, cognitive tests are used alongside the Ghana Living Standards Survey. There are well-developed scoring systems for the various aspects of child development. This is not quite the same as recording developmental milestones, which is viewed as too 'jagged' an approach because it ignores the stages leading up to reaching the milestones and the consolidation of these achievements. However, as discussed in Section 1, such systems are often based on a Western model of childhood and therefore their use in a developing-country setting needs to be done with some sensitivity. Also, the use of such measures may not be feasible in a survey setting with limited time available.

Outcome 6 relates to children's perceptions of well-being and life chances. If we accept that children experience poverty and well-being in different ways to adults, and if we also recognise that children have a right to be heard through greater participation (CRC,1989), it is essential that any research project looking at the lives of children must gather data on the experiences and opinions of children. With this in mind, Young Lives will gather information on children's perceptions of their own well-being and their future life chances. This will clearly be a child-centric, subjective measure, and, as such, this qualitative information will complement the other more quantitative child-specific outcomes being measured. Subjective indicators have been used successfully in some developed countries to measure child welfare. For example, the Canadian National Longitudinal Survey of Children asked 10-11 year olds about their perceptions of key aspects of their life; friends and family, school, themselves, feelings and behaviours and the quality of their relationship with their parents (See Appendix 1, Table A.2.).

Indicators for perceptions of well-being are both age- and context-specific. As children grow up, the scope of their living environment inevitably extends, and therefore, a greater range of institutions and individuals come to influence their perception of well-being. For an 8-year-old, their key social environments are likely to be the family, the school and the immediate environment, whilst, for a 15-year-old, the workplace and peer-group activities away from adult supervision may have greater prominence. Perceptions of well-being cut across all the four areas of child rights. Children's qualitative assessments of their experiences of health care, education and family and community life can all provide a deeper understanding of the dynamics of childhood poverty. Such assessments can also reveal the role of children's agency within their own development and welfare.

One dimension of poverty that routinely appears when discussing adults' experiences of poverty is that of dignity and autonomy (e.g. Baulch, 1996). Dignity and autonomy as experienced by children could be seen to relate more to those issues listed under the right of participation i.e. freedom to express opinions, the extent to which children feel their opinions are taken into account, and extent to which they feel they have control over their lives and active role in society. Just as dignity and autonomy as an adult experience have not proved very amenable to quantitative data collection, the collection of qualitative data on children's perceptions of well-being could also include children's perceptions of being listened to or of being in control of their lives.

In the area of protection, although community and household indicators may suggest a safe living environment, children's perceptions of their environment may reveal something different. Within the community environment, adults may believe children are unaffected by environmental degradation or the incidence of crime. However, consultations with children have shown that children are aware of the limitations of their physical environments and do feel threatened

and/or 'depressed' by their environments. Abuse such as bullying may go unnoticed by adults in the child's life. Children's perceptions are also important in order that findings are not misinterpreted. Whilst some cultures may consider all forms of child work exploitative, children may consider the work they do as enjoyable and a key indicator of their increasing status within their community. Needless to say, gathering information on sensitive issues such as corruption, abuse and exploitation is problematic and a survey-approach is rarely appropriate.

4.2 Influencing Child Welfare Outcomes

Young Lives has developed a number of flow diagrams that suggest the different ways in which various factors can influence child welfare outcomes (See Document 9 in the Technical Documents). Determinants of child welfare outcomes can be collected at the level of the child, the household (family), the community and the country and beyond. For example, Luthar's (1999) review of poverty and child development in the US identifies determinants at the level of the child, the family and the community (see Table 1).

Table 1. Classification of poverty influence on child development in US

Category	Factors
Child attributes	Gender
	Age
	Personality (including intelligence)
Family attributes	Teenage mothers
	Family structure (e.g. single parent)
	Ethnicity
	Parental behaviour
Community (exosystemic) influences	Support networks
	Physical environment
	Neighbourhoods
	Violence
Source: Luthar (1999)	

Of course, 'determinants' does not imply certain consequences only probable ones; hence we may prefer to speak of 'risk factors' rather than determinants. For econometric analysis of the data, only the micro-level determinants (child, household and community) can really be used.

In conceptualising the relationship between the various determinants (or risk factors) and child welfare outcomes, Young Lives draws on three key frameworks; Mosley-Chen (1984), Garcia Coll and Magnuson (1999) and Brookes-Gunn et al (1997). The first two look at a series of variables in relation to single welfare outcomes in children, whilst the latter considers the relationship between a range of variables and a range of individual outcomes.

The Mosely-Chen framework (see Appendix 1, Figure A.1.) essentially identifies the conditions for successful strategies for the production of healthy, well-nourished children. Key assets for such strategies are the time and skills of the parent/carer (in relation to existing siblings), the

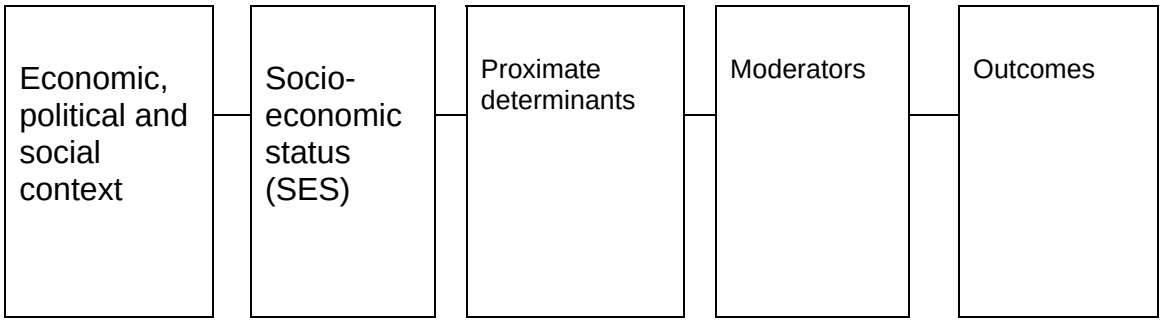
physical environment, and assets that can be deployed for the production or purchase of food, medicines and clothes. Key policies and institutions include access to, cost and quality of health care for the household and the carer. Health, development and nutritional status of a child at a particular age also depend on past history. The key shocks that may affect the strategy include illness or death of a parent and drought. The insight of this approach is that underlying socio-economic status manifests itself in (measurable) proximate determinants.

García Coll and Magnuson's (1999) framework (see Appendix 1, Figure A.2.) for the mental development of infants, identifies exogenous variables such as family socio-economic status and mother's age and education, intervening variables like stress and a measure of child mental development as the outcome. In the Brookes-Gunn et al. (1997) framework (Appendix 1, Figure A.3) for analysing a range of individual outcomes, exogenous factors of macro structures and processes are mediated through neighbourhood and family responses.

Additional terminology from the study of child development may also prove useful. The first distinction is between factors which contribute to resilience or vulnerability to risk. The second is between mediators (those things which affect risk, such as teenage mother or being in a low-income family) and moderators (variables which affect the impact of mediators - for example evidence from the US suggests that young girls are less likely than young boys to be adversely affected by a dysfunctional home environment) of development outcomes (see Luthar,1999). The idea of moderators emphasises the fact that the different factors do not operate in isolation, but may reinforce or offset one another. The methodology needs to be able to capture this interaction.4

Combining these considerations suggests the general framework shown in Figure 1.

Figure 1. Basis of Conceptual Framework



The conceptual framework needs to identify critical socio-economic forces for the 6 Young Lives child welfare outcomes and the proximate determinants that affect the outcomes.

A number of studies were reviewed and typical determinants at the three levels of Young Lives data collection - child, household and community - are discussed below.

Child Attributes

Certain determinants at the level of the child influence welfare outcomes. These include variables such as sex and gender, age, birth rank, ethnicity and personality.

For example, evidence from the US suggests that young girls are less likely than young boys to be adversely affected by a dysfunctional home environment (Luthar, 1999). The focus of the

[4] In econometric analysis it can be done through the use of interactive variables. Qualitative analysis needs careful thought, without premature aggregation, to capture these interactions.

Millennium Development Goals on gender equality access to education indicates that gender can play a role in determining whether or not girls have access to education.

Disability is en example of an attribute that can be both a consequence of poor child welfare outcomes and a cause. Poor welfare in early childhood can lead to disability. In turn, a child with a disability may be excluded from school and other community spaces due to discrimination and/or inaccessible environments and therefore may fail to acquire the same levels of life skills as other children of his/her age group.

Blood ties can also be important. A child's status as orphaned, adopted or having a non-biological relationship to the head of household have all been shown to be indicators of negative welfare outcomes.

Basic determinant child attributes, such as age and sex as identified by Luther (Table 1), are clearly collected as a matter of routine. Information on other attributes may only be relevant to certain cultural contexts e.g. caste in India. Another consideration is that some key child attributes such as personality and intelligence, can be more difficult to deal with within a survey.

Household Attributes

The key household attributes that Young Lives is considering are access to services, livelihoods, social capital and the home environment. The latter covers a range of factors including quality of dwelling and plot, the characteristics of the carer and household head, household composition, parental attributes, and wealth status. It is important to point out here that Young Lives is not collecting income-data. Section 3 discussed the limitations of income-poverty data to identify childhood poverty because it is not a child-specific poverty measure. This is no great loss to our child welfare indicators, however, as we will collect data on household assets as an indicator of economic status. Household attributes are clearly interlinked. For example, access to livelihoods can bring income that allows a household to cover the cost of accessing services, access to social capital can lead to better market linkages which has benefits for livelihood, and access to services in the form of education or training may lead to greater access to social capital.

Access to livelihoods can understandably influence child welfare outcomes in a number of ways. For example, living in a workless household and living in a household with a relatively low, absolutely low and/or persistently low income are considered to be key indicators of child poverty in the UK (Table A.1.). When it comes to a household's access to services, this can relate directly to the child and his/her welfare (e.g. a child's access to education and literacy/numeracy outcomes) or access to services by other household members (e.g. the mother's access to antenatal care and health outcomes for the child). Assessing a household's access to services can be done by mapping the range of services available within the community and linking information on the individual household's use of services. For both health and education, quantitative data can focus on levels of satisfaction with services and can assess an individual child's access relative to the number of facilities available. For example, the World Bank has developed a Core Welfare Indicators Questionnaire (CWIQ), which as its name suggests is a rapid quantifiable survey focusing on use of and satisfaction with health and education facilities.

Quality of social life as a household attribute matters in two ways, each suggesting a different measure. The quality of home life (i.e. the closeness of the family network) matters since it provides security for the child: Durbrow (1999) documents that children of single mothers in the Caribbean are not disadvantaged compared to other children because of social acceptance of and support for such mothers. Wider social networks can be important for a child's life chances in

terms of survival, development and welfare. Negative social environments can be detrimental to child welfare: deficiencies in the home environment can affect long-term mental development, productivity and life chances. Correlations between home environment and delinquency and drug abuse are well-established.

Parental characteristics such as health, education levels, whether or not the head of the household is present, the language used in the home, and emotional health have all shown to influence child welfare outcomes. Aspects of household composition are also key e.g. number of children in the household. In Luthar's (1999) study in the US, the key household level factors that influenced child welfare outcomes included whether or not the main carer was a teenage mother, the family structure (e.g. single parent), ethnicity and parental behaviour.

The household roster will collect basic data on parental characteristics and household composition. However, data related to parental behaviour is far more difficult to collect.

Community Characteristics

If the household attributes include information relating to an individual household's actual access to services, livelihoods and social capital, community characteristics show the range of livelihoods and services available, and the broader cultural, physical and economic environment within which they exist.

A profile of a community can never provide a definitive picture of opportunities and context, as people obviously move beyond their immediate community on a regular basis for work, leisure, health services etc. As a result, it is often easier to build up a more comprehensive profile for a rural community than an urban one, as opportunities beyond the community are more difficult to access due to distance. Such community-level information is vital for understanding the causes of child welfare outcomes. For example, there is a difference between a child who does not attend school because no school exists in the immediate area and a child who does not attend school when one does exist in the neighbourhood: one points to community-wide social exclusion based on a range of community characteristics, whilst the other relates to differentiation between the child's status and that of other children in the community, and suggests that household-level variables are determining whether the child attends school.

Macro- Level Variables

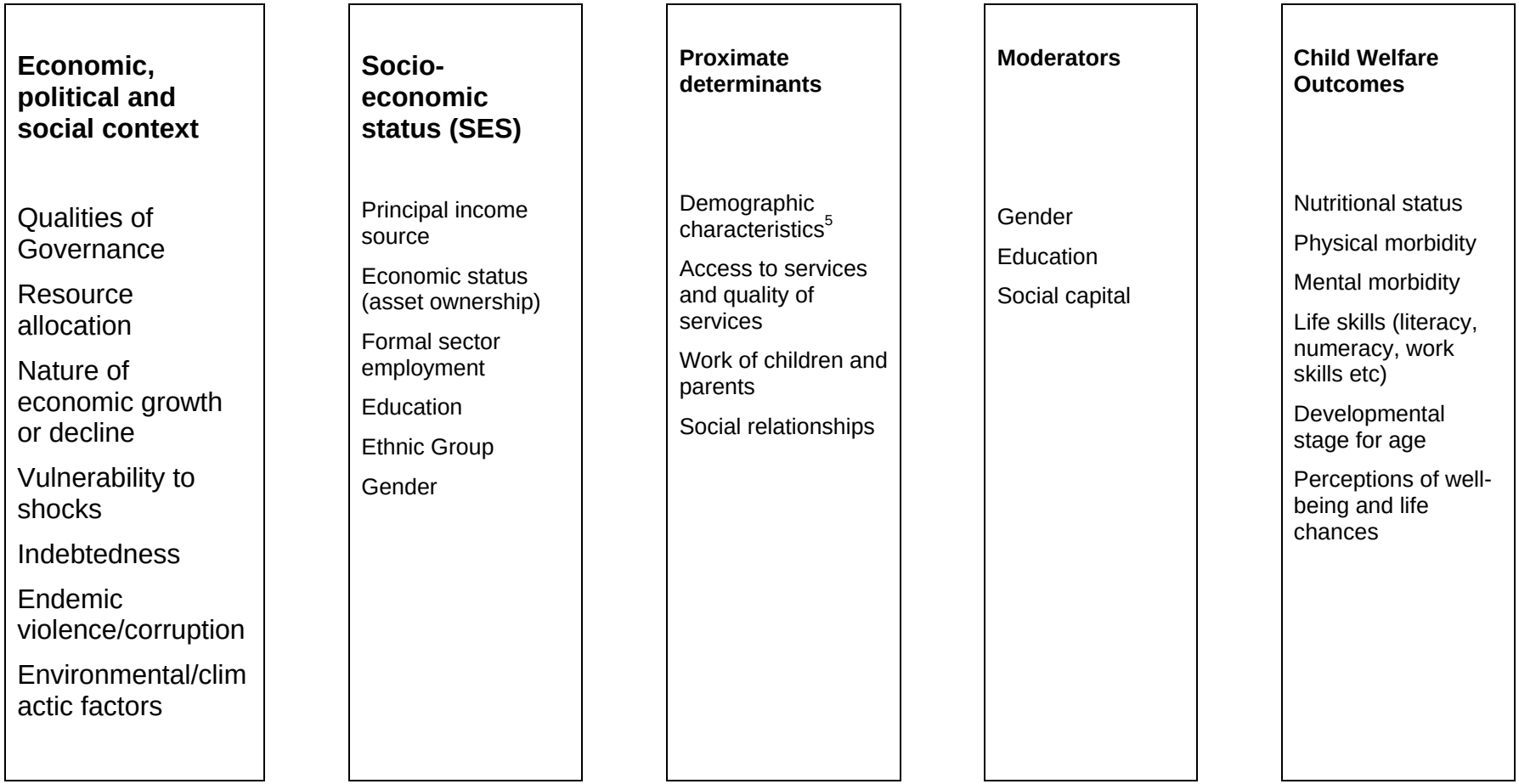
As mentioned earlier, for econometric analysis of the data, only the micro-level determinants can really be used. Analysing the link between macro-level variables and child welfare outcomes is clearly more challenging. However, one key objective of Young Lives is to explore the linkages between macro-policy and child well-being and development. There clearly is a link in that pro-poor growth raises general socio-economic status, which in turn will have an impact on child welfare outcomes. The challenge is to go beyond such a general statement. In this work we will be attempting to break down and expand this statement, exploring how far, in particular circumstances, key policies have delivered/ are delivering pro-poor growth, and what the implications for different groups of children have been.

There may be some policies which affect different households differently (e.g. pricing policy) and differential effects can be studied, but otherwise household survey data may well not yield that much insight on macro linkages. There is one study that does include macro variables (such as terms of trade shocks) in the analysis of child mortality (Working Group on Demographic Effects of Economic and Social Reversals, 1993) but that used DHS data for several countries (and is a somewhat dubious procedure). The most promising approach is to have a good understanding of the country context, so that it is known which economic activities are likely to

prosper and which are not, and to interpret the quantitative and qualitative data in this light (which means classifying children into functional cohorts based on parental occupation). Such an analysis should be able to pick up issues of inequality. This will illuminate effects of macro policy operating through livelihoods, but other effects, for example, those deriving from effects on key services, will need to addressed through more focused thematic studies. The effects of macro policy on children's quality of life, and children's and families social capital / support networks will also need to be picked up by qualitative work. There are of course also other relevant aspects of country context such as environmental situation, conflict, HIV/AIDS and other epidemic diseases etc. Young Lives will use ongoing policy monitoring to provide background information on the range of policies in each country, indicators of policy impact and information on macro and meso level resource allocation.

Based on the review of the literature and the outcomes of the flow diagrams (see Document 9), some of the proposed indicators the Young Lives will consider are shown in Figure 2.

Figure 2. Young Lives Conceptual Framework for Analysing the Causes and Consequences of Childhood Poverty



[5] E.g. rural/urban residence, asset tenure status, ethnic group, religion, migration status, household structure - including single parents, polygamy etc.

References

Barrientos, A., Gorman, M., and Heslop, A. (2003) Old Age Poverty in Developing Countries: Contributions and Dependence in Later Life, *World Development*, 31 (3) (pp.555-570)

Baulch, Bob (1996) 'Neglected trade-offs in poverty measurement' *IDS Bulletin*

Bogin, B. (1998) Evolutionary and Biological Aspects of Childhood, in *Bio-social Perspectives on Children*, ed. C. Panter-Brick, Cambridge:CUP (pp.10-44)

Burman, E. (1994) *Deconstructing Developmental Psychology*, London, Routledge

García Coll, C. and Magnuson, K. (1999) 'Cultural influences on child development: are we ready for a paradigm shift?' in Masten (1999) pp 1-24.

Dubrow, Eric (1999) 'Cultural process in child competence: how rural Caribbean parents evaluate their children' in Masten (1999) pp 97-122.

Hackett R and Hackett, L. Child psychiatry across cultures. *Int Rev Psychiatry*. 1999, 11: 225-235

Iverson V (2002) *Autonomy in child labour migrants,* World Development 30 (5): 817-834

James, A., Jenks, C. and Prout, A. (1998) *Theorizing Childhood,* Cambridge: Polity Press

Levine, R.A. (1998) Child Psychology and Anthropology: an environmental view, in *Bio-social Perspectives on Children*, ed. C. Panter-Brick, Cambridge:CUP , pp.102-130

Luthar, S. (1999) *Poverty and Children's Adjustment*, London: Sage

Masten, Ann (1999) *Cultural Processes in Child Development* The Minnesota Symposia on Child Psychology Volume 29, Mahwah, New Jersey and London: Lawrence Elrbaum Publishers.

Mehta, A. K. and Shah, A. (2003) Chronic Poverty in India: Incidence, causes and Policies, World Development, 31(3): 491-511

Mosley, W.H. and L.C. Chen (1984) 'An analytical framework for the Study of Child Survival in Developing Countries' *Population and Development Review* supplement to volume 10, 25-45.

Narayan, D. (2000) *Voices of the Poor: Can Anyone Hear Us*?, New York: OUP

Panter-Brick, C. (1998) Introduction: Biosocial Research, in *Bio-social Perspectives on Children*, ed. C. Panter-Brick, Cambridge:CUP, pp.1-9

Qvortrup, J. et al. (1994) *Childhood Matters: Social Theory, Practice and Politics*, Aldershot: Avebury

UNICEF (2000) *A League of Child Poverty in Rich Countries,* Florence: Innocenti Research Centre, UNICEF

White, H. and Masset, E. (2002) *Child Poverty in Vietnam: Using Adult Equivalence Scales to Estimate Income-Poverty for Different Age Groups*, Young Lives Working Paper Series No. 6, www.younglives.org.uk

Working Group on Demographic Effects of Economic and Social Reversals (1993) *Demographic Effects of Economic Reversals in sub-Saharan Africa,* Washington D.C.: National Academy Press

Yaqub, S. (2002) 'Poor Children Grow into Poor Adults': Harmful mechanisms or Over-Deterministic Theory? *Journal of International Development*, 14(8): 1081-1094

APPENDIX 1

Table A.1 UK welfare indicators for children and young people

1.	Increase in the proportion of seven-year-old Sure Start children achieving level 1 or above in the Key Stage 1 English and maths tests.
2.	Health outcomes in Sure Start areas: (a) reduction in the proportion of low-birth weight babies in Sure Start areas; and (b) reduction in the rate of hospital admissions as a result of serious injury is Sure Start areas.
3.	Increase in the proportion of those aged 11 achieving level 4 or above in the Key Stage 2 tests for literacy and numeracy.
4.	Reduction in the proportion of truancies and exclusions from school.
5.	Increase in the proportion of 19-year-olds with at least a level 2 qualification or equivalent.
6.	Reduction in the proportion of children living in workless households, for households of a given size, over the economic cycle.
7.	Low-income indicators: (a) reduction in the proportion of children in households with relatively low-income; (b) reduction in the proportion of children in households with low incomes in an absolute sense; and (c) reduction in the proportion of children with persistently low-incomes.
8.	Reduction of the proportion of children living in poor housing.
9.	Reduction in the proportion of households with children experiencing fuel poverty.
10.	Reduction in the rate at which children are admitted to hospital as a result of unintentional injury resulting in a hospital stay of longer than three days.
11.	Reduction in the proportion of 16-18 year olds not in education or training.
12.	Improvement in the educational attainment of children looked after by local authorities.
13.	Teenage pregnancy: reduction in the rate of conceptions for those aged under 18 and an increase in the proportion of those who are teenage parents in education, employment or training.

Source: Department of Social Security (1999) *Opportunity for all: tackling poverty and social exclusion. Indicators of success: definitions, data and baseline information.*

Table A.2 Sample questions from NLSC

Module	Example Indicator
Section A: Friends and Family	I have a lot of friends Other kids want me to be their friend During the last 6 months how well have you gotten along with mother/father/brother/sisters
Section B: School	How do you feel about school I feel safe at school/on way to school I feel like an outsider
Section C: About Me	In general, I like the way I am A lot of things about me are good
Section D: Feelings and Behaviours	I am not as happy as other children I am too fearful or anxious I am cruel, bully or am mean to others
Section E: My Parents and Me	Praise me Threaten punishment more than they use it Seem proud of things I do
Sections F-H: cover puberty, smoking, drinking and drugs, and activities.	
Source: NLSC Questionnaire for 10-11 year olds	

Figure A.1 The Mosley-Chen framework for analysing mortality

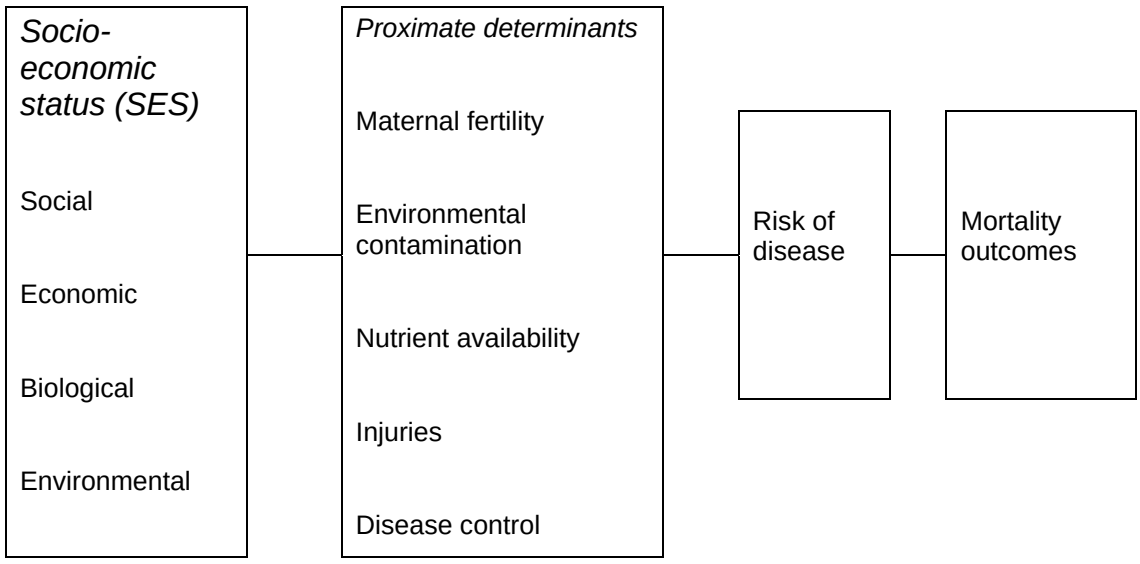
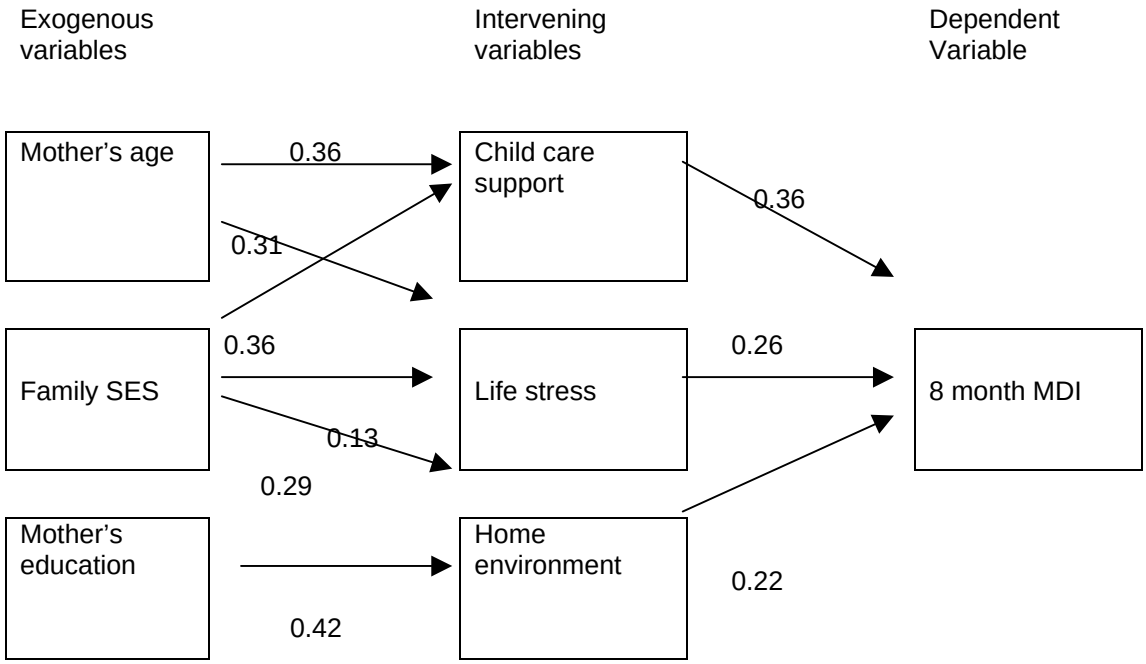
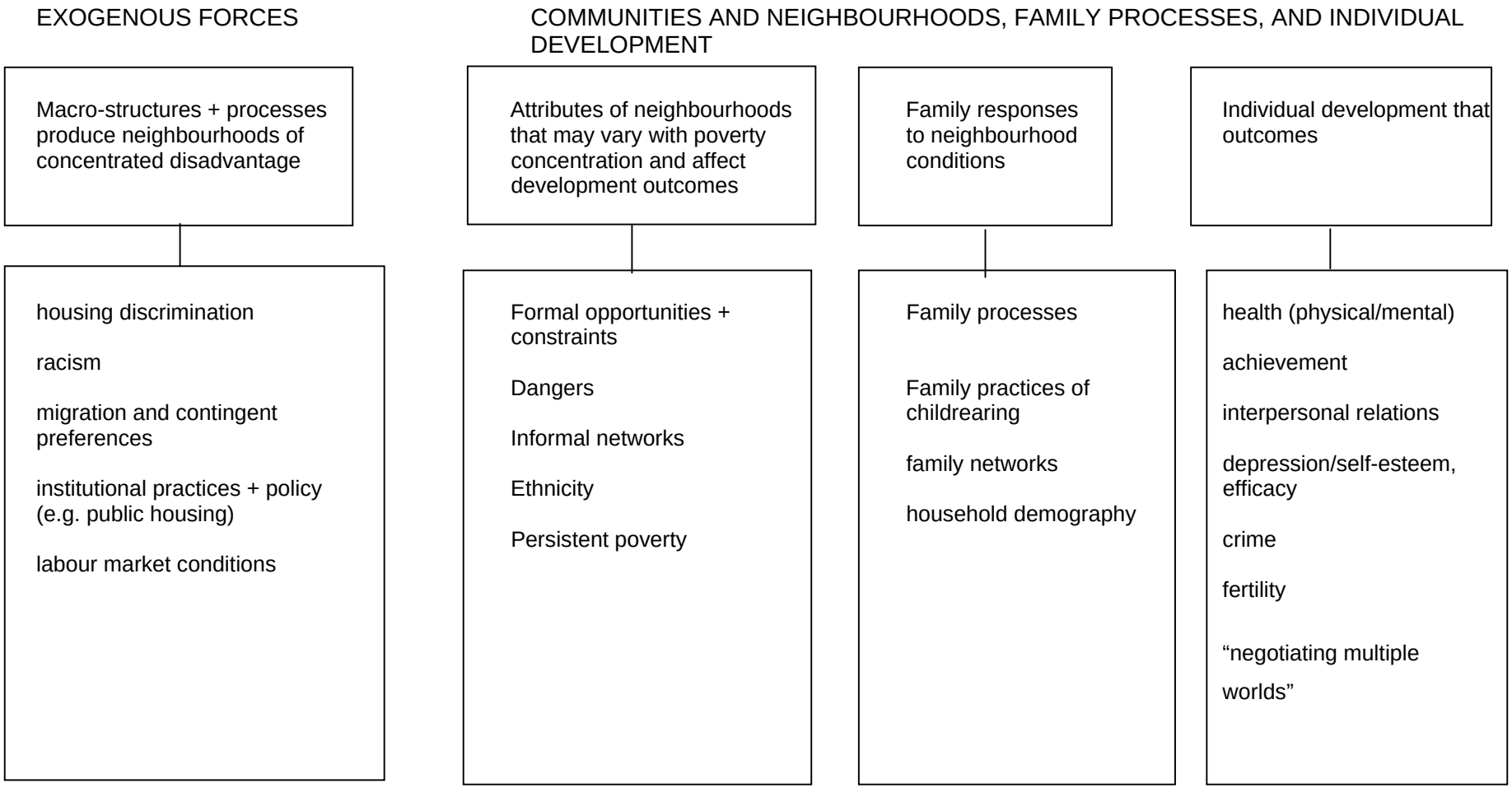


Figure A.2 Causal model of mental development for eight month old babies



Source: García Coll and Magnuson (1999).

Figure A.3 Gephart and Brookes-Gunn Conceptual Model for Analysing Neighbourhoods, Family Processes, and Individual Development



Source: Brookes-Gunn, Duncan, and Aber 1997

Appendix 2

Table 1 Indicators used in developing country analyses

Exogenous variables	Intervening/Mediating variables	Child Outcomes
Child attributes	**School**	**Physical Health**
Gender	Travel time to primary/middle in minutes	Under 1 mortality
Age	Distance to primary/secondary	Under 3 mortality
Innate ability Raven's Progressive Coloured Matrices Test	Mode of transport to school	Under 5 mortality
Ethnic dummies	Average teacher experience in years	Under 11 mortality
Birth rank	Average teacher schooling in years	Sickness/injury in previous 14/30 days/4 weeks/12 months
Orphan [0,1]	Average teacher training in years	Type of medical care sought for child
Religion	Percentage of school classrooms with boards	Child immunised BCG/DPT/Polio/Measles
Caste rank	Ratio of textbooks to classrooms	Diarrhea in previous 24 hrs/2 weeks
Only child	Library {0,1]	Fever/severe cough in last 4 weeks
Married	Lack desks for some children [0,1]	Guinea-worm/bilharzia
Non-bio relationship to head	Over subscribed [0,1]	Pregnant
	Percentage of unusable classrooms	Smoke
Family/household attributes	No water/electricity [0,1]	
Mother's years of schooling	Private school [0,1]	**Anthropometry**
Father's years of schooling	Tuition fees/contributions to PTA	Height-for-age
Mother literate	Child live in household while attending school	Weight-for-age
Mother attended primary/secondary	Number of hours on class schedule	Birthweight<2.5Kg
Father attended primary/secondary	Expenditure on uniforms/books/transport/school money	Arm circumference
Head educated [0,1]	Expenditure on clubs/extra classes	Triceps skinfold thickness
Mother's age	School scholarship	Number of days alive
Mother marital status	Overall quality of school compared to last year	
Mother polygamous marriage		**Nutrition**
Female head [0,1]		Calorie in take % of Indian RDA (latent variables)
Household size	**Health Care**	
Age of head	Number of pre-natal consultations	**Education**
Mid-upper arm circumference of mother	Maternal tetanus immunisation	Years of schooling completed
Mother widow	Mother uses bed net	Delayed enrolment after age 6
Mother's birth place (rural/urban)	Mother's knowledge of cause of Malaria	Choice of middle school
Mother married after 18	Use of Malaria prophylaxis	Average hours per day devoted to school in previous 7 days/3 months
Age of mother at marriage	Mother's knowledge of cause of diarrhea	Currently attending school
BMI of mother	Mother's knowledge of ORT	Main activity school in previous year [0,1]
Height of mother	Type health care utilised by household	Currently enrolled in school [0,1]
Number of adolescents in household	Health care expenditure	Highest grade attained/failed
Number of children less than or equal to 4 years	Assisted delivery	When stopped attending school/reason for not attending
Head reside in household 4 nights per week	First person consulted when sick	Under 6 attending pre-school
Head usually present/absent	Location of consultation	
Languages normally used	Distance to location	**Cognitive ability**
Siblings education	Medical expenditure on sick child	Mathematics achievement test score
		Reading achievement test score
Physical Environment		Can read/write/do written calculations [0,1]
Finished floor		
Piped water supply/wells	**Childcare**	**Work**
Electricity	Who takes care of child	Income generating work [0,1]
Flushing toilet/latrine/no toilet		Hours on household farm/enterprise previous week/3 months
Local public transport available	**Maternal Fertility**	Number of days worked for wage in previous 3 months
Post office	Number of children	Number of days worked for wage in previous 3 months
Telephone	Modern contraception	Has ever worked as apprentice
Bank	Birth interval	Months as apprentice

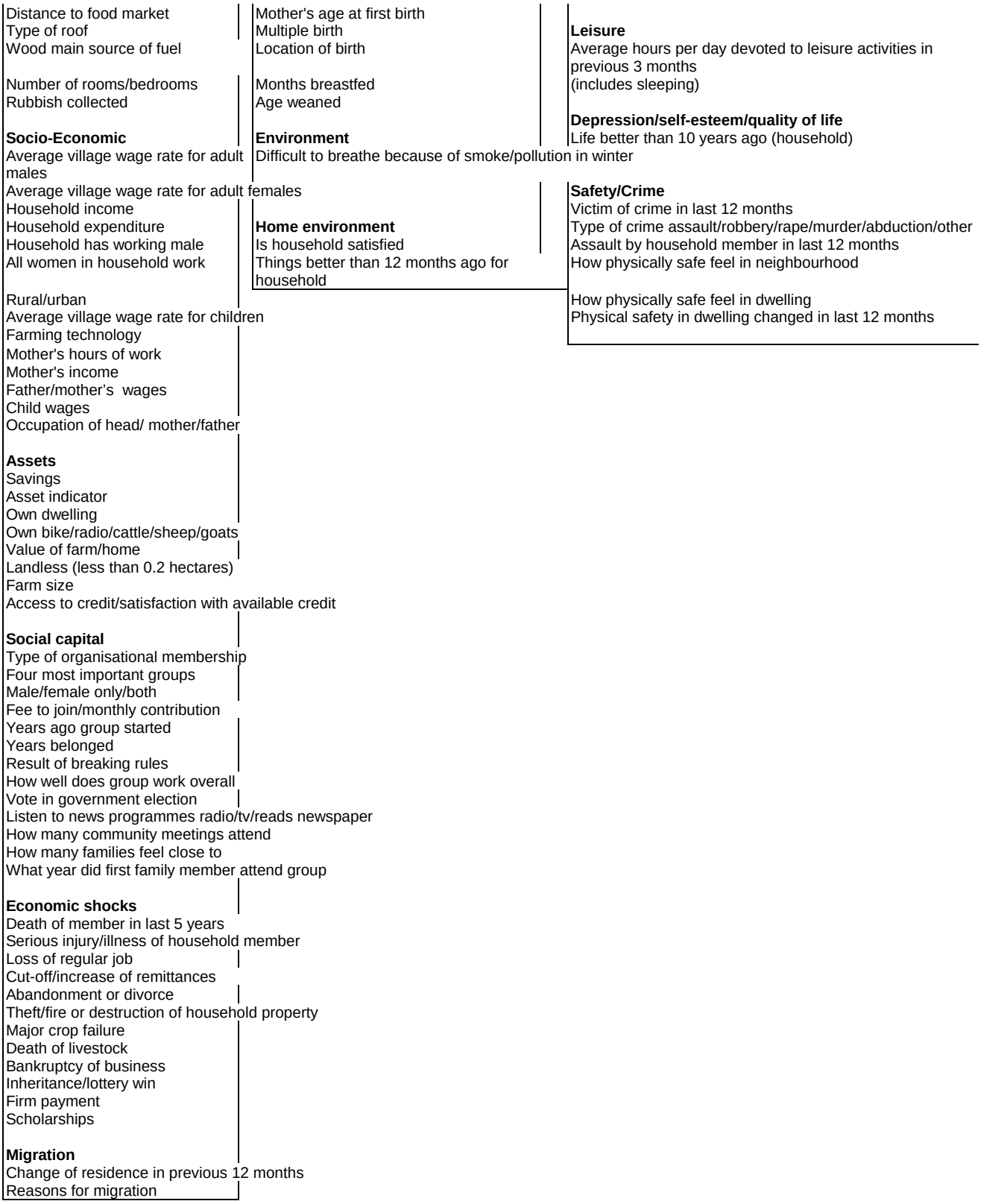

Distance to food market
Type of roof
Wood main source of fuel
Number of rooms/bedrooms
Rubbish collected
Socio-Economic
Average village wage rate for adult males
Average village wage rate for adult females
Household income
Household expenditure
Household has working male
All women in household work
Rural/urban
Average village wage rate for children
Farming technology
Mother's hours of work
Mother's income
Father/mother's wages
Child wages
Occupation of head/ mother/father
Assets
Savings
Asset indicator
Own dwelling
Own bike/radio/cattle/sheep/goats
Value of farm/home
Landless (less than 0.2 hectares)
Farm size
Access to credit/satisfaction with available credit
Social capital
Type of organisational membership
Four most important groups
Male/female only/both
Fee to join/monthly contribution
Years ago group started
Years belonged
Result of breaking rules
How well does group work overall
Vote in government election
Listen to news programmes radio/tv/reads newspaper
How many community meetings attend
How many families feel close to
What year did first family member attend group
Economic shocks
Death of member in last 5 years
Serious injury/illness of household member
Loss of regular job
Cut-off/increase of remittances
Abandonment or divorce
Theft/fire or destruction of household property
Major crop failure
Death of livestock
Bankruptcy of business
Inheritance/lottery win
Firm payment
Scholarships
Migration
Change of residence in previous 12 months
Reasons for migration
Mother's age at first birth
Multiple birth
Location of birth
Months breastfed
Age weaned
Environment
Difficult to breathe because of smoke/pollution in winter
Home environment
Is household satisfied
Things better than 12 months ago for household
Leisure
Average hours per day devoted to leisure activities in previous 3 months
(includes sleeping)
Depression/self-esteem/quality of life
Life better than 10 years ago (household)
Safety/Crime
Victim of crime in last 12 months
Type of crime assault/robbery/rape/murder/abduction/other
Assault by household member in last 12 months
How physically safe feel in neighbourhood
How physically safe feel in dwelling
Physical safety in dwelling changed in last 12 months

Table 2 Indicators used in developed countries

Exogenous variables	Intervening variables	Child Outcomes
Child attributes	**School**	**Physical Health**
Gender		Pregnancy
Birth weight		Injury resulting in hospital stay of 3 days
Age	**Health Care**	Suicide
Birth rank	Timely receipt of pre-natal care	Anaemia
Adopted	Receipt of well-baby visits	STD/HIV infection
Race		Respiratory/digestive/infectious/parasitic diseases
	Childcare	Immunisation
Family/household attributes	Consistency of caregiver	
Mother's education	Abandonment	**Anthropometry**
Father's education		Weight-for-age
Married parents	**Maternal Fertility**	Height-for-age
Religion	Smoking during pregnancy	Low birth weight
Mother's ethnicity	Perinatal complications	
Mother education (years completed)		**Nutrition**
Mother never married	**Environment**	Missed meals
Mother married at birth of child		
Mother currently married	**Parental Attitudes/Values**	**Education**
Divorced	Composite of rule setting	Failed
Family size	Composite of cultural habits	Full time remedial
Years mother married	Parental expectations of child at school	Poor/good homework
Female head	Parental control - index of child responsibilities	How well got on with teacher
Mother's height	Parental aspirations (parents scoring of importance of school	Graduated from high school
Father's height	sports etc.)	Years of schooling
Grandparents in house	Parental strictness	Exclusion
Non-biological children in house	Parents proud of me (child perspective)	Truancy
Presence of partner		16-18 year olds not in education or training
Partner school leaving age	**Home environment**	Enrolment/attendance/drop-out/repetition
Education of mother's parents	Amount of time lives with male/female parent	
Household structure of mother aged 14	Parental attention/verbal interaction	**Cognitive ability**
Number of older/younger siblings	Home Observation of Measurement of the Environment	*Peabody Individual Achievement Tests*
Mothers age	Inventory (HOME - measure of cognitive, emotional support)	Maths (PIATMATH)
	Frequency of mother at breakfast/leisure/play/talking/help	Reading (PIATREAD)
Physical Environment	with reading homework	Verbal (PPVT)
	Frequency of father's positive/negative responses	Scholatic aptitude
Socio-Economic	Family spend evening together once a week	Verbal memory
Mother's income	Toys/books	Class rank
Duration of poverty	Emotional health of parents	Grade point average
Timing of poverty (early, late, early and late)	Regular routines	Armed forces qualifying test
Income to needs ratio	Parents threaten punishment more than use	8 month MDI
Value of state benefits	Parents praise me (child perspective)	TIMSS
Working/non-working father		VERBMEM - short term memory
Working/non-working mother		Learning achievements/life skills
Social housing		
Household consumption		**Work**
Number of earners in household		Number of weeks of work experience
Family go on holiday		Wage rate
Eat out 2-3 times/week		
Dependent on social benefits		**Leisure**
Assets		**Depression/self-esteem/quality of life**
Debt		Fearful (home/neighbouthood)
Savings		Unhappy
Government transfers		Sad
Car		Use initiative
		Cheerful

Social capital
Participation in social/political/community organisations
Support from friends/relatives in other households
Who do you talk to about problems
Out of school activities

Economic shocks

Migration
Mother born outside US
Mother born in developing country

Kept busy
Quality of life (as reported by parents)
Anxiety
Positive attitude to self
Not proud of much
I do things as well as most
I can't do anything right
I am a good person
I have good qualities
I am a person of worth
CES-D depression rank
Satisfied with life
Lonely
Helpless
Satisfaction with institutions

Safety/Crime
I feel safe at school/on way to school

Social/At risk behaviour
Illegal drug use/alcohol/solvents
Sexual active
Behaviour Problems Index (BPI)
Motor and Social Development (MSD)
School behaviour (met with teacher)
Lost temper
Bullied
Get along with others
Carried out responsibilities
Did what was asked
How well got on with family/peers
Inattentive
Fighting
Juvenile delinquency
Do you smoke/how much
Age when started smoking

Child care
Age of entry to 10 or more hours of care
Average hours per week in care
Type of care
Quality of care

Psychiatric
Hyperactivity
Emotional disorder in last 6 months

A Case Study of Sample Design for Longitudinal Research : Young Lives

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Young Lives
An International Study of Childhood Poverty

1. INTRODUCTION

Designing the sampling strategy for a research study always involves a series of decisions and a balance between competing needs. A common example is the need for a sample size sufficiently large for robust statistical analysis, but limited by project resources: often this limits the scope of enquiry. In the following we focus on decisions related to the hierarchy of units of study, such as country, region, district, community and household: approaches to sampling as well as sample sizes are related to situational factors and project priorities.

A plethora of books and other resources exist to assist in designing sampling strategies yet they will rarely give one the entire answer to a particular scenario. Instead carefully considered decisions have to be made. However, perhaps because there are many other interesting issues at the study design stage, or perhaps since there is no "right answer" to sampling decisions, this is rarely a popular topic with students, teachers or researchers. We believe that case studies can be a useful mechanism for illustrating what is often considered to be a rather dry topic. We present here a case study of designing a sampling strategy for the Young Lives multi-country longitudinal study which because of its complexity presented the project team with some interesting questions.

2. Case Study Setting

Young Lives is a collaborative study investigating childhood poverty in four countries - Peru, Vietnam, Ethiopia and India (Andhra Pradesh state) - through follow-up of cohorts of children over time. The study is collecting data on a core set of child welfare indicators and their determinants in all countries, and on country-specific issues identified by researchers, government, policy-makers and other key stakeholders in each country. Funded by the UK's Department for International Development, project partners include academic institutions and Save the Children UK in each of the four countries, the UK and South Africa. Involving these different types of partner, the project aims to ensure effective linkage between the collection of primary data and its utilisation in advocacy and evidence-based policy formulation.

The project has 3 principal broad objectives:

- producing good quality long-term panel data about the changing nature of the lives of children growing up in poverty
- tracing linkages between key policy changes and child welfare
- informing and responding to the needs of policy makers, planners and other stakeholders

There is also a substantial education and media element, both in the countries where the project takes place, and in the UK.

At the heart of the study lies a cohort of children in each country who will be followed up every 3-4 years until 2015. In late 2002, the first round of data collection recruited 2000 children in each country, aged 6-17 months, to form the main cohort. In this first round, extensive data were collected to facilitate tracking of the children in future rounds.

Taking a livelihoods perspective, Young Lives sets out to trace the effects of factors acting at different levels - individual, household, community, regional and national. The project includes monitoring the social and economic policy environment and tracing the effects of macro-and meso-level policy implementation on communities and groups of individuals within them.

Further details on the rationale for the study and on its design can be found in Harpham (2002), Harpham et al (2003) and on http://www.younglives.org.uk

3. Deciding how many children to sample

The decision to enrol 2000 children in each of the four countries was made at a very early stage in the project's conception. The number has a limited statistical basis, however we justify this on the grounds of the study's objectives. Firstly the project has very broad objectives with an emphasis on relatively complex profiles, rather than simple estimates, which make it inappropriate to focus on particular indicators for formal sample size calculations. Secondly, experience with this type of study in the UK and other countries has shown that they tend to evolve over time in terms of their focus at different stages, responding to current interests and needs. The UK Child Development Study, for example, which started in 1958, has addressed a range of important health and development issues only some of which would have been predicted in the early planning stages. This too militates against a detailed statistical basis for the initial sample size.

Ultimately we had to select a number which appeared feasible to manage, was possible within the study's budget, and which we considered would yield sufficiently large numbers for statistical analysis in a general form. For example, based on the full 2000, the 95% confidence interval for a percentage will be approximately +2%. This sample size allows the detection of moderate-sized differences in such quantities between subgroups when the subgroups are at least 20% of the overall sample, say. It allows substantial cross-tabulations using the whole sample in each country and for some analyses of selected subsets with a reasonable expectation that fairly common categorisations will be represented by a sample size of a magnitude in the hundreds.

We also had to be clear about what such a sample size would prohibit - rare measures such as mortality will not be captured with any meaningful degree of precision. Increasing the sample size to cover such outcomes would have had far-reaching consequences for the project design, such as limiting to one country, owing to financial limitations. More importantly, however, it was accepted that such measures were not central to the study, or could be obtained through large-scale national surveys such as the Demographic and Health Surveys, while many other important and less-researched issues could be adequately captured with a sample of 2000.

Finally, planning for the project began in the year 2000 and it was initially known as Children of the Millennium. The promotional possibilities of linking the sample size to the milestone year also contributed to the final decision, albeit not in a primary way.

4. Deciding who to sample

The initial aim of the project was stated as "to measure and find out about what happens to children born into poverty in the millennium". This was modified in later discussions to include the aim of capturing children moving into poverty as well as out of it. Nevertheless the focus is on the poor and results from general population sampling will not give sufficient attention to very poor children, and will not best serve to justify and bring about changes in attitudes and agendas which will favour these children.

On the other hand, there were at least four important reasons for not only sampling poor children:

- to provide more powerful arguments by comparing information on poor children with others

- to capture children moving into poverty
- to help avoid dismissal of results by potential users as being "not representative"
- to produce estimates which will more easily be able to be compared between the four countries

Thus although a sampling method designed to represent equally the whole national population of children born in the qualifying period was not considered appropriate, a method which over-samples the poor but which enables, where necessary, "national estimates" through weighted averages, is more suitable.

5. Deciding how to sample

A key need for the study's objectives was to obtain data at different levels - the children, their households, the community in which they resided, as well as at regional and national levels. This need thus determined that children should be selected in geographic clusters rather than randomly selected across the country. There was, however, a much more important reason for recruiting children in clusters - the sites are also intended to provide suitable settings for a range of complementary thematic studies. For example, one or a few sites may be used for a qualitative study designed to achieve a deeper level of understanding of some social issues, either because they are important in that particular place, or because the sites are appropriate locales to investigate a more general concern. The quantitative panel study is seen as the foundation upon which a coherent and interesting range of linked studies can be set up.

Thus we decided on a design, in each country, comprising 20 geographic clusters with 100 children sampled in each for the following reasons.

Why 20 sites?

Returning to the project's objectives, the set of sites should serve to illuminate, and to a limited extent maybe typify, the settings in which the impact of policymaking and policy implementation can be examined. There is a vast range of ways in which the community setting can act as a mediating factor in the effect of macro-level events on the community, household and individual. Examples are the procedures followed by state or local administrations, as well as infra-structural, agro-ecological, communal and other factors. Teasing out what is germane from the mass of potentially 'explanatory' information requires concentrated commitment from someone with well-developed social understanding, local knowledge and a commitment to the project over lengthy periods of time. The above supports our decision that a comparatively small number of sites should be sampled, because they should be studied intensively.

Why 100 children per site?

The study design includes thematic projects in addition to the main survey of the cohort. These might include qualitative studies such as the collection of individual narrative accounts of a displacement episode due to a dam or some such 'development' project; this would of necessity focus on one geographic cluster. Such studies run the risk of being dismissed as 'just' case studies, but we intend that by linking these to the survey data they can be contextualised and enriched by the existence of child, household and some community level information on each cluster. We believe that clusters which are capable of yielding 100 compliant households are big enough to provide settings for many cluster level in-depth studies, but not so big that the thematic project researcher would have great difficulty tracing the index children if necessary.

Comparisons between sites will be a significant element of analysis and that objective strongly supports the supposition that sample sizes at each site should be about equal –100 index children in our case. For a quantitative, univariate measure being compared between two groups, the t-test formula is the basis of a quite trivial demonstration that equal sample sizes in each group are more effective than unequal ones, in terms of precision. An ordinary-language version of this argument is that if one group is poorly characterised by a small, weak sample it can only provide a limited comparison with any other group, however much detail is available on the latter.

Finally, the longitudinal nature of the project means we must ensure that even after some degree of attrition there will be ongoing contact with a sample of plausible size in later phases of data collection. This militates against any smaller starting number than 100 per site.

What's in a name?

It is tempting to think of these geographically compact sites in terms of the statistical procedure of cluster sampling, but this is a less than relevant paradigm. Cluster sampling theory is largely developed for one-off cross-sectional studies, and has little or nothing to say about repeated measurements through time, or about compensating for anticipated attrition through losses to follow-up whether this is due to respondents moving, or their refusing to continue as participants. Statistical considerations about cluster size are driven by the assumption that accurate estimation of one quantitative determinand is the primary focus of interest.

Our initial use of the term clusters when designing the study caused some confusion and expectations not relevant to the purpose of the study, among collaborators and stakeholders consulted. We switched to using the term sites which is in (much closer) analogy with the established terminology of sentinel site surveillance. As will be seen in a cursory web search, these are mostly used in public health applications. This procedure involves the selection of a relatively small number of settings which are then regularly studied in a consistent way. Typically (Last, 2001), this is referred to as surveillance if the observations are frequent, or monitoring if they are at longer intervals as in our case, where quite complex processes of maturation and change could take place between visits which may be some years apart.

The analogy is not perfect. In many health examples, sentinel site surveillance collects relatively simple data to provide trends in public health indicators. In contrast, with each participant in a panel study, there is a much more ambitious data collection agenda, and a greater concentration on retaining exactly the same panel members in successive waves of data collection. In particular, our concern with the livelihood trajectories of the children as they grow makes respondent substitution quite impossible.

6. Deciding how to choose the sites

Clusters are usually not regarded as being units worth reporting on individually, and indeed they are assumed in general statistical theory to be chosen at random. In our study, random selection of sites was not deemed appropriate for the following reasons:

- its benefit lies in situations where relatively simple variations in units of observations can be 'averaged out' by a sufficient sample size. With 20 sites, we are not close to the sample size that would be required to generate such benefits at the site level of sampling.
- on the other hand, the very terminology of 'sentinel' sites suggests, quite appropriately, that each is chosen to provide a view of a particular aspect, and that the reports on a consistent basis from each site are worthwhile and interesting in

their own right. If effectively justified, that feature displaces the desideratum of randomness of selection.

- simple random sampling does not take account of information about the units sampled, but in selecting, say a commune from a Vietnamese province, a great amount and diversity of information is available and ought to be intelligently used. There is far too much such data for it to be effectively utilised just by stratifying a sample of size 20.

Reconciling our decision to over-sample the 'poor' with the particular needs for site-specific data resulted in a semi-purposive selection of sites, followed by the equivalent of random sampling of households within a site. Sampling sites rather than households on the basis of being categorised as 'poor' or not had other practical considerations. The fieldwork process within sites requires field staff whose skills must include developing good relations with community leaders, engaging potential households with the study, accurate recording of data, and establishing a robust set of tracking information so the panellists can be found when needed. It seemed inappropriate to expect that the same field staff should be required to draw complex, perhaps invidious, and even socially divisive distinctions between households as 'poor' or not 'poor'. For example, this might hamper recruitment, and it would certainly impose a severe training demand. Our decision was thus to sample with respect to 'poor'/not 'poor' at the level of site selection, and within sites to sample across the board by a simple, practical, but objective, process.

7. Semi-purposive sampling of sites

A qualitative approach is needed to weigh up and balance the complex information about potential sites, but the sampling will carry little credibility with target audiences if it appears to have been ad hoc or whimsical. The first strand of our approach was to utilise in-country experts. Country partners have advisory committees whose members are people with well-established reputations, concerned with poverty matters and aware of current ideas e.g. of poverty as a multi-faceted issue. These experts discussed key factors to cover in the selection of sites, such as geographical location and type, or particular population sub-groups. The achievement of an expert consensus in such a group proved to be stimulating and less difficult than might have been initially thought. This process also served to raise awareness of the project in circles where results must eventually be appreciated and used. It contributed to establishing local ownership and interest in project development.

Secondly, each country developed a clear description of the protocol by which the selection of sites was made. A guiding principle was that if the process is adequately described, it should be possible for an independent researcher to replicate the same process and come out with a sample having almost all its major characteristics in common with the one chosen by the first team. A primary target was that most sites should represent 'poor areas'. There is no universally accepted definition of 'poverty' or of 'poor areas': classifications in common use in developing countries are often crudely money-metric and neglect most facets of poverty highlighted for example in livelihoods frameworks such as DFID (2002, 2003). Thus all we can say is that we selected 'poor areas' according to a particular protocol with an operational definition of 'poor areas'. This operational definition might be articulated as "the kind of area you would find if you followed the same protocol we used, with the same quality and breadth of expertise that our team brought to the task". This is discussed in Wilson (2001). Of course until resources materialise to try replicating the procedures, the plausibility of this type of argument depends entirely on its verbal description, and the standing of the experts concerned.

Countries varied in the availability of existing information which could assist in the sampling of sites. All four were able to construct some kind of poverty ranking of sites which contributed to selection and the details can be found for each country in the Preliminary National Reports accessible at http:/www.younglives.org.uk/.

8. Sampling within each site

Household selection within sites operates in quite a different way from site selection. The basic sample of 2000 children and their households constitutes a large number of people who will be personally unknown to any policy-maker or central data analyst. To generalise from the data they provide, they must be sampled in an objective way, sufficiently well documented that it is unarguably clear what they do represent. This is the underlying aim of randomness of sampling.

It is recognised that at any geographic scale e.g. within our sites, there will be a mixture of levels and types of poverty. However, we are taking a longitudinal perspective and acknowledge that manifestations of poverty may be episodic or transient, or may display either upward or downward trends. If we restricted attention to the poorest households at the start we would not be able to observe downward movements. In search of improved understanding of what drives these changes, it seems suitable to take the equivalent of a random sample within sites, rather than one driven by our pre-conceptions, which would probably be limited to rather crude categorisations of households' current poverty status.

The practicalities of fieldwork vary from place to place as there are substantial topographical and administrative differences from site to site within and between countries (e.g. there are differences, very relevant to the project's aims, between the slums of Hyderabad and areas of Andhra Pradesh largely inhabited by scheduled tribes). Choosing and walking along city streets may be the only possibility in densely populated areas, while procedures used in ecology such as line transects may suit some peri-urban or rural sites with lower density, with distance sampling methods used in low-density areas.

Partners have agreed across countries on principles for household sampling, rather than details. The exact procedures have been adapted to utilise reliable social structures and information sources in locally-appropriate ways, again with careful documentation of protocols:-

- a sample indistinguishable in composition from one drawn at random from qualifying households
- cost-effective field procedures for traversing each site
- reasonable control of biases, for example due to the unavailability of any respondent from a household during the listing sweep through the site, e.g. by using neighbour information

9. Sampling for useful analyses

There can be no serious claims that a sample is adequate except in relation to specific analysis objectives. Having described the sample selection above, we recap here on how the design selected addresses the information needs of the Young Lives study.

The sample in each country is of modest rather than large size and has not been chosen to be directly nationally representative. Of course, larger sample sizes allow greater disaggregation of samples into more tightly defined subgroups: the Young Lives study will face some restrictions, but we have satisfied ourselves that there are important general findings for which the samples

will be quite adequate. There are several broad levels and types of analysis with different needs.

Separate sites

At the site level itself we need to describe the survey results and information from any mini-projects, as well as site-level information which may include local events or trends resulting from implementation of meso- or macro-level policy decisions. Much of the analysis done on individual sites will be quite basic description, but we will certainly be interested in more sophisticated work which will require the combined or integrated results from different sources, qualitative or quantitative, at site level. This requires careful attention to linking relevant pieces of information together, for example at individual/household level.

Comparison of sites

If one or a few sites are compared with another set of sites, there may be some numerical values where the statistical significance of differences can be assessed, but in many cases the comparisons will be more holistic, that is taking many factors into account. This requires consistency of recording practice between sites for any information which may be involved in such comparisons. Ideally it also leads to equal amounts of information or equal sample sizes in each of the entities being compared.

Summary over sites

At regional level, or for the whole state, there will be needs for summative analysis, i.e. the development of overall regional or national conclusions. Where these relate to quantitative estimates, component results can be weighted to take account of the different amounts of information from different places, different sector sizes etc. A similar but less formal process is needed for qualitative information. This requires an understanding of how big or important the components are, and ideally means samples (perhaps numbers of sites) are proportional to the component importance.

The last sentences of the two previous paragraphs propose contradictory requirements: a compromise is always necessary, having regard to which analysis purpose is most important. The design of the Young Lives project makes the information collected likely to be more powerful at the first two of these levels, i.e. for separate sites and for comparisons. The nature of the sampling and the scale of the work involved make Young Lives quite limited as a source of national-level summative information. Young Lives is intended much more as an in-depth study of relationships between pieces of information, rather than an instrument to collect national statistical results. If the nature of the sampling was adjusted to make this latter the priority, the scale of the funding we have – and therefore of the work involved – would still make it impractical to claim that we can generate usefully accurate and fully "representative" national level data, and in the adjustment we would have lost the precious opportunity to do detailed work within sites. In relation to summative anlysis, we have accepted as an inevitable consequence of its scale that this project has much less potential than, for example, the UK Millennium Cohort Study. Nevertheless, the longitudinal element of this study suggests that in years to come there will be outputs which illustrate the life trajectories of those initially recruited as one year old index children, integrating qualitative and quantitative data. Some of the most powerful results of this type are likely to be of a qualitative character, dependent more on the integrity and intelligence of the observation and case selection than on a large mass of quantitative data.

10. Concluding remarks

The case study illustrates how sampling decisions have to take account of existing information and intended project analysis, as well as balancing practicalities about logistics with statistical considerations. This led to selecting a sentinel site monitoring approach in the Young Lives project.

The large 'anonymous' sample at household level was everywhere selected by fully-documented and objective methods closely analogous to statistical random sampling, but adapted to local settlement patterns.

The small sample of 20 sentinel sites per country acknowledged that random sampling would disregard the very extensive and diverse information available about potential sites. Instead clear, detailed, and we believe repeatable, protocols were written up to describe the structured sequence of decisions made in selecting and defining sites. The protocols and the resulting selection of sites were exposed to expert scrutiny in brain-storming sessions with relevant experts including potential critics and official users, and their endorsement was obtained for the decisions made.

Procedures for over-sampling the poor were systematised and documented in each country. They were confined to the site selection stage to avoid biases and difficulties through inappropriate, maybe invidious decisions by field staff at the within-site household selection level.

This process would generate samples reasonably representative of household wealth status within individual sites. It did not predetermine actual numbers of children in the sample whose households were 'in poverty', but local knowledge and pilot studies assured us these would be well-represented. In any event, existing information would in most cases only have served to predetermine 'poverty' with respect to narrower and weaker, largely money-metric, definitions than that favoured by Young Lives.

It is freely acknowledged that Young Lives is quite limited as a source of national-level summative information. Within the project, other objectives are prioritised over this one: primary goals are the development of in-depth understanding at site level and carefully-structured comparisons amongst sets of sites. The sampling plan is geared to the top priority objectives.

References

Harpham, T. (2002) *Measuring child poverty and health: a new international study.* J. Trop. Paediatrics 48, 128-129

Harpham, T., Huttly, S., Wilson, I.M. and de Wet, T. (2003) *Linking public issues with private troubles: panel studies in developing countries.* J. Int. Dev. 15, 353-363

Last, J.M. (2001, 4th edition) *A dictionary of epidemiology.* Oxford University Press.

DFID (2002) *Sustainable livelihoods guidance sheets* available at http://www.livelihoods.org/info_guidancesheets.html

DFID (2003) *Sustainable livelihoods distance learning guide* available at http://www.livelihoods.org/info_distanceLearning.html

Wilson (2001) *Sampling and qualitative research* available at http://www.rdg.ac.uk/ssc/dfid/booklets/tp2-sampling.pdf

Justification of the content of the child questionnaire

Young Lives
An International Study of Childhood Poverty

Introduction

This draft document is to be read in conjunction with the Young Lives Study (YLS) 7.5-8.5 year old child questionnaire. The child questionnaire complements the 7.5-8.5 year old household and community questionnaires and focuses on data that must be collected directly from the child. This includes the child's perceptions, aspirations and the impact of illness and work from the child's perspective. The literature on research with children is large and the style and content of the questionnaire draws on key texts (Alderson 1995, Greig and Taylor 1999, Graue and Walsh 1998) and on the experiences of UNICEF (1999) and the World Bank's (2001) work on Voices of Poor Children Around the World.

The purpose of the justification documents and issues of data quality and data analysis are outlined in the household questionnaire justification document.

References:

Alderson, P (1995) Listening to Children: Children, Ethics and Social Research. Barkingside: Barnardos

Greig, A.& Taylor, J.(1999). Doing research with children. London: Sage.

Graue ME & Walsh DJ (1998). Studying Children in Context: Theories, Methods, and Ethics. Thousand Oaks, California: Sage Publications

UNICEF, 1999 Voices of Children and Adolescents in Latin America and the Caribbean. UNICEF, New York.

World Bank, 2001 World Development Report: attacking Poverty. Oxford University Press, Oxford.

Section 1: Locating information, ID's and Data handlers

The information collected in this section allows the children to be linked to future rounds and to the household, anthropometry and community surveys. The identification information is also useful for quality checks and for locating individual questionnaires if there are data queries.

Section 2: Perceptions of well being

The child's perceptions of well being is one of YLS outcome indicators. It is our only child centric (i.e. obtaining subjective views of children) outcome indicator, so it is particularly important. Recent qualitative work by UNICEF (1999) and the World Bank (2001) on voices of poor children around the world identified indicators of well being which are important to children. This section covers some of those indicators: **environmental quality** (water, air, rubbish); the degree to which people 'look down' upon children or **treat them badly**; **perceived safety** of their community and **sufficient food to eat**. In addition there are open ended questions about what the child **likes/dislikes about their community** and what makes the child **happy/unhappy**. These are included in case there are additional indicators which prove to be important to the YL children. Also, there is a question about aspirations: **'what do you want to be when you grow up'**. It is IMPORTANT to note that in every 20th questionnaire 'why'

questions are added after some of the perception questions. While it is not appropriate to gain this qualitative information on 1,000 respondents, it will be useful to have some responses for analysis.

References:

UNICEF, 1999 Voices of Children and Adolescents in Latin America and the Caribbean. UNICEF, New York.

World Bank, 2001 World Development Report: attacking Poverty. Oxford University Press, Oxford.

Section 3: Social capital

The fact that adults' social capital should not be used as a proxy for children's social capital is only slowly being recognised (Jack and Gordon 1999, Morrow 1999, Morrow 2001, Runyan et al 1998, Harpham 2002). Previous research plays down children's 'agency' and overemphasise the influence of parents on children's lives. YL provides an opportunity to begin to explore the difference between children's social capital and caregivers' social capital and the role that each of them plays in the child's well-being. Qualitative work on UK children's social capital by Morrow has demonstrated that it is possible and meaningful to separate structural social capital (connectedness) from cognitive social capital (feeling supported/helped). Connectedness in YL will be measured through asking about **frequency of play, attendance at school** and support will be measured by asking about **availability of someone to help the child**.

References:

Harpham T, Grant E & Thomas E 2002 Measuring social capital in health surveys. Health Planning and Policy 17(1): 106-111.

Jack G, & Jordan B 1999 Social capital and child welfare. Child and Society 13: 242-256.

Morrow V 1999 Conceptualising social capital in relation to the well being of children and young people: a critical review. Sociological Review 47 (4): 744-765.

Morrow V 2001 Using qualitative methods to elicit young people's perspectives on their environments: some ideas for community health initiatives. Health Education Research 16 (3): 255-268.

Runyan D, Hunter W, Socolar R, & Amaya-Jackson L 1998 Children who prosper in unfavourable environments: the relationship to social capital. Pediatrics 101: 12-18.

Section 4: School and work

These questions complement data collected in the household questionnaire and detailed justification for the inclusion of these topics can be found in the household questionnaire justification document. The questions explore children's definition of work and the impact of work and school from the child's perspective. The child is asked to list any **activities they do for money or goods**, say **whether they like the activity**, **what they dislike about the activity**, whether the activity **causes them to miss school** and what they **like and dislike about school**. As in the household questionnaire the questions on child work are taken from the International Labour Organisations (ILO) standardised survey, which was developed as part of the Statistical Information and Monitoring Programme on Child Labour (SIMPOC) (Jensen 2001). The school and work questions also draw on the experiences of the UNICEF (1999) and the World Bank's (2001) Voices of Poor Children.

References:

Development Of Indicators On Child Labour Robert T. Jensen, Ph.D. http://www.ilo.org/public/english/standards/ipec/simpoc/jensen/index.htm. 2001

UNICEF, 1999 Voices of Children and Adolescents in Latin America and the Caribbean. UNICEF, New York.

World Bank, 2001 World Development Report: attacking Poverty. Oxford University Press, Oxford.

Section 5: Health

As is outlined in the household questionnaire justification document there has been a tendency to view the school age child as essentially healthy because they suffer the lowest mortality of any group, yet their morbidity has rarely been studied (World Bank 1993). The child questionnaire repeats the questions asked of the caregiver about any **health problems that affect the child's activities such as school attendance and socialization**. These questions allow us to explore health problems from the child's perspective and compare these with the caregiver's perspective.

The few studies that have actually measured illness in school age children in developing countries have found stunting, anaemia and parasitic helminth infections prevalent (PCD 1997). Whilst information on **stunting** will be collected in the YLS (by measuring height and weight) measuring helminth infections requires physical examinations, which is not feasible in the YLS. Severe **anaemia** can be identified by palmar pallor, the method used in the World Health Organisation Integrated Management of Childhood Illness (WHO and UNICEF 1997). Studies have found that identifying severe anaemia using palmar pallor has a high sensitivity (60-93%) and specificity (57-99%) in Africa, but is less useful outside Africa (Luby et al 1995, Zucker et al 1997, Weber et al 1997, Kalter et al 1997). Individual countries must decide if identifying anaemia is appropriate in their setting, if it is fieldworkers should be trained using the World Health Organisation Integrated Management of Childhood Illness in Service Training Guidelines (WHO and UNICEF 1997).

Individual countries must decide whether **vision tests** are appropriate in their setting. Countries who decide to test vision should use the Snellens tumbling E test. There are few data on the validity and effectiveness of current sight screening methodologies but a recent review (Hartmann et al 2000) recommended the Snellings Tumbling E as test for monocular distance acuity in young children. The test consists of a chart with the letter E in different orientations (up, down, right and left) and sizes. Children are tested by asking them to point in the direction the letter E at each letter size; it has been successfully used in populations with low literacy.

We recommend that countries do not include a hearing test in the child questionnaire. The validity of simple hearing tests in community settings in the absence of an audiometer is unclear (Browning et al 1989, Dempster and Mackenzie 1992, Gell et al 1992, Mackenzie et al 1995) and our sample is too small too pick up sufficient cases of severe hearing impairment for meaningful analysis.

References:

Browning GG, Swan IR, Chew KK. Clinical role of informal tests of hearing. J Laryngol Otol. 1989 Jan;103(1):7-11

Dempster JH, Mackenzie K. Clinical role of free-field voice tests in children. Clin Otolaryngol. 1992 Feb;17(1):54-6

Gell FM, White EM, Newell K, Mackenzie I, Smith A, Thompson S, Hatcher J. Practical screening priorities for hearing impairment among children in developing countries. Bull World Health Organ. 1992;70(5):645-55. Review

Hartmann EE, Dobson V, Hainline L, Marsh-Tootle W, Quinn GE, Ruttum MS, Schmidt PP, Simons K. Preschool vision screening: summary of a Task Force report. Behalf of the Maternal and Child Health Bureau and the National Eye Institute Task Force on Vision Screening in the Preschool Child. Pediatrics. 2000 Nov;106(5):1105-16.

Kalter HD, Burnham G, Kolstad PR, Hossain M, Schillinger JA, Khan NZ, Saha S, de Wit V, Kenya-Mugisha N, Schwartz B, BlackRE. Evaluation of clinical signs to diagnose anaemia in Uganda and Bangladesh, in areas with and without malaria. Bull World Health Organ. 1997;75 Suppl 1:103-11.

Luby SP, Kazembe PN, Redd SC, Ziba C, Nwanyanwu OC, Hightower AW, Franco C, Chitsulo L, Wirima JJ, Olivar MA. Using clinical signs to diagnose anaemia in African children. Bull World Health Organ. 1995;73(4):477-82

Mackenzie I, Thompson S, Smith A, Bal IS, Hatcher J. Practical advice on field studies into hearing impairment in a developing country. Trop Doct. 1995 Jan;25(1):25-8.

Partnership for Child Development. Better health, nutrition and education for the school-aged child. http://www.child-development.org/Home.htm. 1997

Weber MW, Kellingray SD, Palmer A, Jaffar S, Mulholland EK, Greenwood BM. Pallor as a clinical sign of severe anaemia in children: an investigation in the Gambia. Bull World Health Organ. 1997;75 Suppl 1:113-8.

World Bank. World Development Report 1993: Investing in Health . Oxford University Press. New York. 1993.

World Health Organization and UNICEF (1997) Integrated Management of Childhood illness: In service training http://www.who.int/child-adolescent-health/publications/pubIMCI.htm#monitoring and evaluation

Zucker JR, Perkins BA, Jafari H, Otieno J, Obonyo C, Campbell CC. Clinical signs for the recognition of children with moderate or severe anaemia in western Kenya. Bull World Health Organ. 1997;75 Suppl 1:97-102

Section 6: Numeracy and literacy

Education is more than school enrolment, to explore the impact of education on basic learning competencies the YLS tests numeracy and literacy. The tests used are adapted from the Living Standards Measurement Study (LSMS) (Glewwe 1991) and explore the child's ability to **read letters**, a **simple word** and a simple **sentence**, **to write a simple sentence** and perform a **simple calculation**. The flaws in these simplistic measures of literacy (Bhola 1990, Wagner 1990, Levine 1998) must be acknowledged in the YLS analysis. These flaws include that the YLS literacy and numeracy test assumes that literacy and numeracy are cognitive phenomena, whilst in reality they are also cultural; with cultural variations in meanings, functions and patterns. The YLS questions may not tap into real literacy or numeracy practices, and cross cultural comparisons should be made with caution. Assuring the equivalency of test items across countries is difficult, this is particularly true for the YLS which, due to feasibility issues, measures literacy with only one test item rather than a battery of items.

References:

Bhola, H. S. (1990). Evaluating 'Literacy for Development': Projects, programs and campaigns. Hamburg: UIE/DSE.

Glewwe, P. (1991). Schooling, skills, and the returns to government investment in education: An exploration using data from Ghana. LSMS Working Paper No. 76. Washington, DC: The World Bank.

Levine, K. (1998). Definitional and methodological problems in the cross-national measurement of adult literacy: The case of the IALS. Written language and literacy (Vol. 1 , pp. 41-61).

Wagner, D. A. (1990). Literacy assessment in the Third World: An overview and proposed schema for survey use. Comparative Education Review 33 (1), 112-138.

Section 7: Child development

Potential child development tests are outlined in the household questionnaire justification document. Most development tests are hard to administer, require standardisation, training, involve lengthy interviews and would be difficult to use in the planned sample sizes. Little is known about their use in developing countries. The criteria for selecting the YLS development test were simplicity, acceptability and appropriateness for cross cultural use, and the **Ravens Coloured Progressive Matrices** (CPM) were considered most suitable to use with the 7.5-8.5 year old children (Grantham-McGregor personal communication).

The CPM has been used in over 2500 published studies and reliability and validity is acceptable across cultures. The CPM measures eductive ability - the ability to evolve or develop new insights and information from that which is already perceived or known. The test will be used to assess the chief cognitive processes of children under 11 years of age (Raven et al 1998).

The CPM consists of three sets of 12 problems; set A depends on a child's ability to complete continuous patterns which, towards the end of the set, change first in one and then in two directions, at the same time. Success in set A^b depends on a child's ability to recognise discrete figures as spatially related wholes, and to choose which figures are appropriate to complete the design. Set B contains a number of problems based on analogies that are capable of discriminating whether a child has the capacity to reason in this way (Raven et al 1998).

The YLS analysis of the CMP must acknowledge a) the limited explanatory power of intelligence as a construct, b) the usefulness of the concept of eductive ability and c) the role of the environment in the development, expression and release of these qualities (Raven et al 1998).

References:

Raven J, Raven JC, Court JU. 1998. Manual for the Raven's progressive matrices and vocabulary scales. Oxford Physiologists Press.

Justification of the content of the household questionnaires

Young Lives
An International Study of Childhood Poverty

Introduction

This draft document is to be read in conjunction with the Young Lives Study (YL) 1yr old household questionnaire and the 8yr old household questionnaire and justifies their content. This document focuses first on the sections common to both the 1yr old questionnaire and the 8yr old questionnaire and then focuses on the sections specific to each of the questionnaires.

These topics are:

Content of household questionnaires

Topics in both questionnaires	Topics exclusive to the 1yr old questionnaire
Household Composition	Child care
Child Health	Pregnancy and breast feeding
Caregiver Background	Caregiver mental health
Livelihoods	
Economic Changes	**Topics exclusive to the 8yr old questionnaire**
Socio-economic Status	Child education
Social Capital	Child's work and daily activities
Anthropometry	Child mental health

For each topic the document:

1. Outlines why each topic is important for inclusion.
2. Describes the rationale for what and how information is collected on each topic.
3. Explains how information is turned into scores or used (for details see tabulation plan).

The aim of the questionnaires is to include key measures of the infant outcome variables (health, nutritional status and cognitive development), and factors that are likely to affect these and the later outcome measures. It is important to remember that this is just one data collection instrument and will be used in conjunction with country specific modules/questions, the community questionnaire and the child questionnaire.

During the questionnaire design several points were considered:

1. **Data quality:** Respondent burden, recall error and question clarity, order and sensitivity were among the data quality issues considered when designing the YL questionnaire. The Young Lives Study is one of breadth rather than depth and to keep the questionnaire length reasonable many compromises had to be made in content.

2. Data analysis: The analysis of data gathered in the Young Lives project will be complex:

After each round of data collection, it will be appropriate to analyse some of the data on a cross-sectional basis:-

(i) To provide descriptive information on the whole sample. E.g. percentage of index children malnourished; distribution of wealth and asset scores

(ii) To compare subgroups, at this point in time. E.g. compare between types of cluster, compare between gender groups

(iii) To compare results between countries

The latter two scenarios will require control for confounding variables.

From round 2 onwards, it will also be appropriate to analyse some of the data on a longitudinal basis:-

(iv) To link measurements at an earlier round with outcomes at the current round. E.g. whether certain critical events impacted on a child's schooling (controlling for confounding factors)

(v) To study differential child outcomes where community events have occurred. E.g. where a disaster or a policy has taken place at the community level at a particular round, what influences some children "doing better" than others at later rounds.

The data being collected vary greatly in their nature, and the extent to which they can be used for the types of analysis above also vary. We need to consider the following:-

(a) Some variables are transitory in nature. For example, the measures of child physical morbidity refer to a point/period in time. Cross-sectional analyses are fine but their use for longitudinal analysis will be limited and needs more careful consideration. For example, the prevalence of diarrhoea is a useful morbidity indicator for cross-sectional analysis. However, linking whether or not a child had diarrhoea in round one with any outcome indicator at a later round is unlikely to have much validity. In contrast, a less transient variable will be more useful for longitudinal analysis. For example, low height-for-age is a measure of chronic malnutrition and data suggest that children generally settle into "growth channels" in the latter half of infancy. So linking height-for-age in round one with later indicators such as development stage for age should be more feasible.

(b) Some measures vary within an individual and this has implications for how a variable is composed to represent this variability and how they are used in analysis. A common example is measurement of behaviours. One might ask what is "usually done" or what was "done last time a particular event occurred" or some other summary measure. Each have their strengths and weaknesses but frequently the resulting variable is more useful for "population analyses" than "individual analyses". For example, when interviewing children directly, it might be easier to ask with reference to a specific event, e.g. "did you take care of your younger brother yesterday?" where taking care of siblings might be something which children do on some days but not on others. We can use that information to compare the occurrence of sibling care between, say, gender groups. If we repeated the question a week later then we might expect similar proportions of children to answer in the affirmative but they will not necessarily be the same ones as the previous week. This makes linking the occurrence of sibling care asked in this way to an outcome more problematic because of the internal variability of the sibling care measure.

(c) Some variables will be very culture-specific. This will limit the cross-country comparative analyses, and possibly some sub-group analyses within country. Even variables which seem quite objective, such as birth weight categorised as small/average/large, can be interpreted quite differently and will be more limited than knowing the actual birth weight and local standards against which to calibrate it.

(d) Some variables are proxies for other variables which are difficult or impossible to measure. This affects their interpretation, especially when attempting to establish causation. For example, attendance at antenatal care can represent a number of different issues (foetal nutrition, child care practices, maternal knowledge) some or all of which might be associated with an outcome variable.

Enrolment procedure

The enrolment section is administered on the first visit and includes the consent procedure. The section also identifies eligible households, records basic information about the child and identifies the principal 'caregiver'. If there is more than one eligible child in the household, one is chosen at random using a pre-provided selection list.

For children identified as being between the target ages, eligibility is confirmed by recording the **date of birth,** this needs to be collected with a minimum entry of year and month. Much that happens to a child, for example their development, is age dependent and the date of birth can be used to accurately calculate the child's age in later rounds. The limitations of collecting data on age and date of birth are well known (Newell 1995). In many settings adults do not possess accurate information about their age or date of birth, but knowledge of the age of young children is usually higher (Bicego and Boerma 1994). Surveys such as the Demographic and Health Surveys (DHS) found the completeness of birth date data varied between 50-99% (Arnold 1991). Where necessary the YL fieldworkers will be trained to obtain the best possible estimates of the index child age using a variety of techniques including extensive probing, reference to documents, event calendars and comparison with other children. Where data is missing imputing is common practice and numerous techniques exist both to estimate the extent to which ages are misreported and to correct age distributions.

Young Lives also collects **standard demographic data** about the index child during enrolment. Such data puts the child's life in context, identifies target groups for policy, is useful for tracking and is essential in understanding the YL outcome variables. For example, in some settings a child's gender is associated with factors such as family resource allocation (Thomas 1994), malnutrition (Choudhury et al 2000), and school attendance (Krishnaraj et al 1998).

Identifying the caregiver is an essential but difficult task, in some cases the biological mother may live in the household but the person responsible for the child, and the most appropriate respondent, is another household member such as the child's grandmother. Young Lives selects the primary caregiver by asking for the person who can best answer questions about the index child. This is followed by a series of questions which clarify the role this person has in the child's 'life enabling us to classify different types of caregiver.

Section 1: Locating information

The information collected in this section allows respondents to be linked to future rounds and to the anthropometry and community surveys. The identification information is also useful for quality checks and for locating individual questionnaires if there are data queries. The **region** question will have country specific categories which allows the comparison of geographical subgroups. They also allow migration to be picked up in later rounds.

Contact with the biological mother is also recorded in this section (information about the biological father is collected in section 2).

References:

Arnold-F. *An assessment of data quality in the Demographic and Health Surveys*. (1991). Presented at the Demographic and Health Surveys World Conference, Washington, D.C., August 5-7, 1991. 24 p

Bicego-GT; Boerma-JT. *Demographic aspects of the quality of data on births in the Demographic and Health Surveys*. In: An assessment of the quality of health data in DHS-I Surveys, [compiled by] Macro International. Demographic and Health Surveys [DHS]. Calverton, Maryland, Macro International, (1994)

Choudhury KK, Hanifi MA, Rasheed S, Bhuiya *A. Gender inequality and severe malnutrition among children in a remote rural area of Bangladesh.* J Health Popul Nutr. (2000) Dec;18(3):123-30.

Krishnaraj-M; Sudarshan-RM; Shariff-A. *Gender, population and development. New Delhi, India*, Oxford University Press, (1998). xv, 363 p.

Newell C. *methods and models in demography*. (1995). John Wiley and Sons, Chichester

Thomas-D *Like father, like son; like mother, like daughter. Parental resources and child height*. J Human Resources. (1994) Fall; 29(4):950-88

Section 2: Household composition

There are a wide variety of living arrangements experienced by children in developing countries and it is essential for Young Lives to record these and how they change over time. This not only contextualises the children's lives but household composition has been associated with many components of the Young Lives multidimensional poverty measure. For example, studies in developing countries, have found child nutritional and morbidity, household ability to cope with illness, and per capita expenditure associated with household size (Pelto et al 1991, Sauerborn 1996), type (extended or nuclear) (Nanda 1996,) and sex and age composition (Evenson and Mwabu 1996, Handa 1996).

As is standard practice in household surveys Young Lives collects data on composition using a **household roster**. Data collected is limited to essential and objective data because administration can be time consuming and proxy reports unreliable, especially for non-family house members (Arnold 1991). Young Lives is a child centric study and the relationship of each household member to the **index child** is recorded. Local relationship categories are used to improve meaningfulness. Each member is given a unique **ID** which links them to other sections of the interview and to future survey rounds. To ensure clear identification of the caregiver, their partner and the household head their IDs are recorded separately. Data from the roster can be

used to both perform analyse for the household as a unit and for individual household members such as the household head, and if different the caregiver or their partner.

Definition of the household: there is no correct way of defining a household but a clear definition is needed to ensure consistency. Young Lives has adapted the world bank (2001) definition

> *'a group of the people who live together, usually pool their income and eat at least one meal together when they are at home. This does not include people who have permanently migrated or are considered visitors'.*

The definition is broad enough to include people who migrated for work. Methods to limit the exclusion of household members from the roster will be explored during fieldworker training.

Definition of the household head: Traditionally in surveys the headship is self reported. It is often unclear how households define headship. It could, for example, be defined by age, decision making power or resource control (Rosenhouse 1989). Differences in definition should either be explored and county specific questions added or acknowledged in the analysis.

Basic demographic data: Information on the sex and age of household members is essential in understanding the household composition. No validity problems are anticipated in the reporting of **sex,** but misreporting of **age** is likely. The limitations of collecting data on age are discussed in the Enrolment section of this document. Protocols and methods of estimating ages are widely used and, where necessary, should be included in fieldworker training. The requirements of data accuracy differ between key household members, such as the caregiver and their partner, and other members, this should also be reflected in fieldworker training.

Education is part of the human capital asset in the livelihoods framework. Most studies have looked at the impact of maternal or paternal education on child welfare (Desai and Alva 1998, Glick and Sahan 2000, Bishai 1996), but it is anticipated that the education level of other household members will also be important. The Living Standards Measurement Study (LSMS) advocates collecting additional information on certificates, diplomas and grade repetition (Glewwe 2000). These are not measured in Young Lives for all household members because they are unlikely to be known by a proxy respondent. The highest level of schooling reached (none, primary, secondary etc) is recorded for all. The caregiver's education is also recorded in section 6 by asking about **years of schooling**. Years of schooling can be measured either as the highest grade completed in school or the total number of years of schooling. As grade repetition distorts the total number of years measure, the **highest grade** was considered a more suitable measure for Young Lives. The grade categories will be country specific, and we suggest that countries adapt those used in the Demographic and Health Survey.

Disability: According to the World Health Organisation (WHO), 10% of the people in any community have disabilities (WHO 1981) but their identities and the impact of the disability on them and their families have rarely been determined. WHO defines disability as

> *'any restriction or lack (resulting from impairment) of ability to perform an activity in the manner or within the range considered normal for a human being'.*

Identifying disability through surveys is difficult because reports are influenced by complex and contextual dynamics. For example reports are affected by local perceptions/definitions of disability, type of disability and the associated social implications and stigma of the disability (Kuruvilla and Joseph 1999). To reduce misclassification the YL question includes a definition, by asking about **a permanent health problem that restrict the member performing normal day to day activities**. Misclassification is still likely, but studies have found that the most debilitating conditions yield the highest report rates (Katzenellenbogen et al 1995), and YL should at least pick up very severely disabled household members- who are likely to have the

greatest impact on the household. The YL question does not explore the type of disability, this is likely to mediate the impact on the family, and this limits the usefulness of the YL question.

Financial and care support: Young Lives uses the roster to collect information on intra-family financial and, for the younger cohort, childcare support of the index child. Whilst YL does not measure the magnitude of the support the survey gives some idea of the breadth of family support, which can then be used to look at its impact on child welfare. It is increasingly recognised that policies have unforeseen consequences on patterns of intra household resource allocation (Fuwa et al 2000) and recording changes and differences in support may be important in understanding policy impact. Support is clearly defined in the YL question as: **providing money or goods for the child almost every month in the last 6 months** and **being responsible for taking care of the child for at least a morning afternoon, evening or night every week for the last 6 months**. Using definitions which includes frequency helps guide the respondent and the reference period helps focus caregivers and improves comparability between respondents. We consider a reference period of 6 months short enough to ensure reasonable accuracy but long enough to be unaffected by short term fluctuations.

Biological parents: In developed countries paternal involvement has been associated with children having greater self-esteem, higher education achievement and more secure gender identification (Brase et al 1997) and there is a widespread belief that children benefit from maintaining contact with their fathers. Less is know about developing countries and YL thus collects information about contact with non-resident biological fathers. Information about legal paternal recognition is also collected where appropriate.

References:

Arnold-F. *An assessment of data quality in the Demographic and Health Surveys*. (1991). Presented at the Demographic and Health Surveys World Conference, Washington, D.C., August 5-7, 1991. 24 p.

Bishai D. *Quality time: how parents' schooling affects child health through its interaction with childcare time in Bangladesh*. Health Econ. 1996 Sep-Oct;5(5):383-407.

Brase-M; Dinglasan-R; Ho-M; Kail-N; Katz-R; Lopez-V; Ton-TG. *UNICEF - Yale School of Public Health research project: The role of men in families*. New Haven, Connecticut, Yale University School of Medicine, International Health Dept., 1997 Spring. iv, 154 p

Desai S, Alva S. *Maternal education and child health: is there a strong causal relationship?* Demography. 1998 Feb;35(1):71-8

Evenson-RE; Mwabu-G. *Household composition and expenditures on human capital formation in Kenya*. Research Pop Econ. 1996; 8:205-32.

Fuwa N, Khander SR, Mason D, Vishwanath. *Intrahousehold Analysis*. In Grosh, M. & Glewwe, P. Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study. Volumes 2 . The World Bank.2000

Glewwe P. Education. In Grosh, M. & Glewwe, P. Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study. Volumes 1. The World Bank.2000

Glick-P; Sahn-DE. *Schooling of girls and boys in a West African country: the effects of parental education, income, and household structure*. Econ Educ Rev. 2000 Feb; 19(1):63-87.

Handa-S *Expenditure behavior and children's welfare: an analysis of female headed households in Jamaica*. J Dev Econ. 1996; 50(1):165-87

Katzenellenbogen J, Joubert G, Rendall K, Coetzee T. *Methodological issues in a disablement prevalence study*: Mitchells Plain, South Africa. Disabil Rehabil. 1995 Oct;17(7):350-7.

Kuruvilla S, Joseph A. *Identifying disability: comparing house-to-house survey and rapid rural appraisal*. Health Policy Plan. 1999 Jun;14(2):182-90.

Nanda-S. *The impact of family milieu on the prevalence of protein-energy malnutrition in infants*. Indian J Mat Child Health. 1996 Jan-Mar; 7(1):20-3

Pelto GH, Urgello J, Allen LH, Chavez A, Martinez H, Meneses L, Capacchione C, Backstrand J. *Household size, food intake and anthropometric status of school-age children in a highland Mexican area*. Soc Sci Med. 1991;33(10):1135-40

Rosenhouse S. *Identifying the poor: Is headship a useful concept?* Living Standards Measurement Survey Working Paper 58. 1989. Washington DC. World Bank

Sauerborn R, Adams A, Hien M. *Household strategies to cope with the economic costs of illness*. Soc Sci Med. 1996 Aug;43(3):291-301.

WORLD BANK. *Standardized Welfare Indicators*. 2001. http://www4.worldbank.org/afr/poverty/easuring/Indicators/definitions_ en.htm

WORLD HEALTH ORGANISATION. *Disability prevention and rehabilitation*. World Health Organ Tech Rep Ser. 1981;668:1-39.

Section 6: Caregiver background

Length of stay: Recent migrants are less likely to have community links and be familiar with services. For example, an analysis of 15 DHS surveys found that rural to urban migrants are often a highly disadvantaged segment of city populations (Brokerhoff 1995) and recent migration has been associated with increased risk of child mortality (Brockerhoff and Hewett 1998, Bicego and Ahmad 1996).

Literacy: The ability to read is one measure of the benefit of school attendance. Maternal literacy has been strongly associated with child survival (Caldwell 1989, Cleland and VanGinneken 1989, Ware 1984). The literacy of the caregiver and their partner has important implications for employment, participation in the formal sector, accessing services, child care, child education; and thus child welfare.

Illiteracy definitions are subject to variation in different countries. Young Lives defines literacy as

> *'not being able to, with understanding, both read and write a short simple statement on everyday life'.*

The YL literacy question relies on **self reported literacy** and is taken from the DHS. In order to try and capture functional literacy the YL question refers to the ability to read a letter or newspaper. Only one study that validated this measure in a developing country setting was located, this found that reported and tested literacy were highly consistent (Bender and McGann 1993, Lee 1994). The YL question on **frequency of reading a newspaper or magazine** can also be used to indirectly test the validity of the reports. Young Lives also explores '**literacy in the locally most important language**' as it is important in understanding education and employment opportunities and affects interactions with formal sectors such as the health system.

Language: In some countries many people speak a language that is not the official or majority language. Information on the caretaker's **'fluency and literacy in the locally most important language'** is important in understanding education and employment opportunities and affects interactions with formal sectors such as the health system.

Ethnicity and religion: Ethnic and religious differences often reflect very different lifestyles and opportunities. An analysis of DHS data from 11 African countries, for example, found ethnicity associated with education, housing, socio-economic status, occupation, use of preventive health services and child survival (Brockerhoff and Hewett 2000). In some sites it may not be appropriate to collect data on ethnicity and the question can be replaced with one on race or omitted as appropriate. Young Lives collects data on both the index child and the caretaker, as where these differ their influence is likely to be particularly important. Ethnicity is a combination of self identification and identification by others and, as in most surveys, YL ask about **self perceived ethnicity and religion**.

References:

Bender DE, McCann MF. *Validation of self-report of literacy among periurban women in Bolivia*. Int J Epidemiol. 1993 Aug;22(4):747-8.

Bicego-G; Ahmad .*Infant and Child Mortality*. Calverton, Maryland, Macro International 1996 Aug. vii, 58 p. (Demographic and Health Surveys Comparative Studies No. 20)

Brockerhoff-M; Hewett-P *Ethnicity and child mortality in sub-Saharan Africa.*: New York, New York, Population Council, 1998. 45 p. (Policy Research Division Working Papers No. 107).

Brockerhoff M. *Child survival in big cities: the disadvantages of migrants*. Soc Sci Med. 1995 May;40(10):1371-83.

Caldwell-JC *Cultural and social factors influencing mortality levels in developing countries*. Annals American Academy Pol and Soc Sci. 1990 Jul; 510:44-59

Cleland J, van Ginneken J. *Maternal schooling and childhood mortality*. J Biosoc Sci Suppl. 1989;10:13-34

Davies PT, Cummings EM. *Marital conflict and child adjustment: an emotional security hypothesis.* Bull. 1994 Nov;116(3):387-41

Jouriles EN, Pfiffner LJ, O'Leary SG. *Marital conflict, parenting, and toddler conduct problems*. J Abnorm Child Psychol. 1988 Apr;16(2):197-206

Kitzmann KM. *Effects of marital conflict on subsequent triadic family interactions and parenting*. Dev Psychol. 2000 Jan;36(1):3-13.

Lee J. *Validation of self-report of literacy among Periurban women in Bolivia.* Int J Epidemiol. 1994 Jun;23(3):646-7

Olenick-I *Women's exposure to mass media is linked to attitudes toward contraception in Pakistan, India and Bangladesh*. INTERNATIONAL FAMILY PLANNING PERSPECTIVES. 2000 Mar; 26(1):48-50.

Ware-H. *Effects of maternal education, women's roles and child care on child mortality*. In: Child survival: strategies for research, edited by W.H. Mosley and Lincoln C. Chen. New York, New York, Population Council, 1984.:191-214. (Population and Development Review 10, Supplement, 1984

Section 7: Livelihoods

Three strategies have been identified and organised as distinct lines of enquiry in the wider livelihoods literature. Scoones (1998) incorporates these into a framework to analyse the dynamic processes and outcomes in an investigation of livelihoods. The three livelihood strategies identified include:

- **Agricultural intensification:** the distinction is made between capital-led and labour-led intensification. Capital led intensification is usually associated with external intervention or change in the economic environment. Thus insight may be provided into policy reforms that affect the relative returns to capital and labour and their substitution e.g. fertiliser subsidies or agricultural technology changes.
- **Livelihood diversification**: either for diversification in the face of temporary or permanent loss or failing livelihood, or actively pursuing diversification for accumulation and reinvestment. Thus such a concept is automatically complex and it will be difficult to distinguish between a diverse portfolio of economic activities and developed responses to stresses and shocks as 'coping-strategies'.
- **Migration**: distinction is made between the different motivations i.e. voluntary or enforced migration.

Agricultural intensification: By asking the caregiver about the activities of all household members, and the time devoted to each activity, we will be able to measure the degree to which certain activities are being more intensively pursued by the individual or household. This will not be restricted to just agricultural activities.

In order to examine whether agricultural intensification has been capital or labour it is possible to use the survey data to calculate capital/labour ratios. The community question currently collects price data for fertiliser as a capital input but could be extended to other inputs. It also collects wage rates for men and women. The study will not be collecting plot yield data. However, the data could be augmented with district level data on plot yields to calculate regional productivity levels (average products of capital and labour).

Diversification: Livelihood diversification, a relative term, requires the identification of a base activity (or activities) from which to diversify away from. Importantly all activities have a spatial dimension which may result in their classification as migration.

Table 1. Classification of livelihood diversification activities

	No change in space	Change in space
No change in activity	'base livelihood': cultivation of crops, livestock production by household	Migration to work as agricultural labourer.
Change in activity	'livelihood diversification': trading, artisan activities and casual labour.	Circular migration - for women, as domestic workers (urban); for men as urban labourers, work in mines.

Adapted from Brock (1998) as presented in Carswell, 2000.

Section 7 provides time allocation data for all types of economic activity (days/months/year) at the individual level. Self-ranking allows for the activities to be categorised as primary and secondary in terms of their importance to contributing to household income. The questionnaire

classifies occupations as waged and non-waged. The distinction is relevant in rural areas where the participation in labour markets may have stabilising or destabilising effects on household income, depending on the relative importance of fluctuations in labour demand and yields or prices of agricultural products (Reardon 1997). The level of participation in the labour market also shows to what extent households are able to respond to economic changes by increasing their supply of waged work (Kochar, 1995). Livelihood studies have used prevalence rates of secondary activities to monitor livelihood diversification (for example, Carswell, 2000). In this study 31 % of all adults in the study sites of Southern Ethiopia engaged in livelihood diversification activities. These were defined as formal employment, casual labour, artisanship, cultivation, herding, and trading if undertaken as a secondary activity. Petty trading was found to be the major diversification activity.

Migration and remittances: The use and efficiency of migration as a strategy can be determined by the household structure and it's cohesiveness; a secure supply of labour within the household; and networks and social capital (de Haan *et al.*, 2000). The household structure is known and its cohesiveness may be proxies for. Social capital and networks will be restricted to the area of residence, the questionnaire will not extend to collect data on the conditions of the migrant's destination.

Actual levels of remittances are difficult to measure, particularly as the majority of funds may be transferred on the return of the household member. Income received from remittance has been excluded in line with the general principle of not collecting income data. The source of remittances can be described as formal (Government), semi-formal (NGO's) or informal (individuals). Poor households typically engage in social networks operating through gifts and loans on a reciprocity basis. The identification of the necessity of a safety net requires the knowledge of the informal insurance mechanisms (Murdoch 1999). Section 7 will identify the household's who receive remittances, the regularity and terms on which they receive these remittances. Negative remittances (i.e. money or goods given out) will also be collected to gain greater insight into local networks and the level of social capital. Households may occasionally insure against economic changes by obtaining loans from formal institutions as well as from traders or moneylenders (Eswaran and Kotwal 1989). However, indebtedness itself may become a source of vulnerability. Hence, household indebtedness and ability to repay need also to be known.

References:

Carswell, Grace (2000), *'Livelihood diversification in southern Ethiopia'*, IDS Working Paper 117, Brighton

Ellis, Frank (1998), *'Household strategies and rural livelihood diversification'* , Journal of Development Studies, Vol 35, No.1, October, pp.1-38.

Eswaran, M. and A. Kotwal (1989). *Credit as Insurance in Agrarian Economies*. Journal of Development Economics, 31.

de Haan, A, et al. (2000), '*Migration and livelihoods: case studies in Bangladesh, Ethiopia and Mali*' , IDS Research Report 46, Brighton

Kochar, A. (1995). *Explaining Household Vulnerability to Idiosyncratic Income Shocks*. AEA Papers and Proceedings, 85(2): 159-164.

Morduch, J. (1999). *Between the Market and the State: Can Informal Insurance Patch the Safety Net?* World Bank Research Observer, 14(2): 187-207.

Reardon, T. (1997). *Using Evidence of Household income Diversification to Inform Study of the Rural* Non-farm Labor Market in Africa. World Development, 25(5): 735-747.

Scoones, Ian (1998), '*Sustainable rural livelihoods: a framework for analysis*', IDS Working Paper 72, Brighton

Toufique, K.A. (2001), '*Sustainable rural livelihoods in Bangladesh*', IDS Research Report 45, Brighton

Section 8: Economic Changes

Events module: The individual questionnaire contains a specific module to capture a range of negative economic, physical and social events that have affected household members since the birth of the YL child (for the younger cohort) or in the last 3 years (for the older cohort). The module will be used to provide both panel and cross-section data in order to investigate the relationship between shocks and outcomes. The panel data that will be collected in this study will allow for the separation of long term or permanent poverty from vulnerability to shocks. Importantly, panel data will control for the heterogeneity of the population and avoid bias due to unobserved characteristics in cross-sectional regressions that effect policy inferences (see Dercon, 2001).

The module goes on to capture the nature of the household's mechanism to cope with the main event that was faced by individuals of the household, including no change in behaviour. The range of coping strategies include those that would directly impact upon the child, such as taking children out of school or missing meals as well as other strategies.

The identification of sets of households affected by particular economic events will be instrumental in crossing the divide between macro aggregates, such as unemployment or government transfers and the impact at the household level, such as loss of employment by family member or government remittances cut-off. The effect at the household level will then be used as a determinant of childhood welfare. The sample size will not however, allow for the examination of named government programmes.

Role of assets: The livelihoods approach adopted in this study will focus upon asset and quantitatively measure the different types of assets. Asset inequality and extreme poverty can cause bad risk management and thus prevent efficient coping strategies. Pushed further to survival point the poor become more risk averse and undertake 'over-cautious' production strategies, forgoing larger future streams of income. Or, given little collateral, face a credit squeeze, which forces them to riskier activities (i.e. cultivate floodplains or child labour) [Sinha and Lipton; 1999; see also World Bank 2000].

The events module identifies household's that use assets or savings in response to shocks and this will combined with actual quantitative data on asset holdings to examine the role of assets in coping with vulnerability. The individual questionnaire collects data on a range of physical, human and social capital. But particular focus should be given to the most liquid forms that may employed to smooth consumption as times of stresses, such as consumer durables or livestock. An example asset index is described above and it's construction at the appendix. The existing literature on crop income uncertainty finds that households act to smooth consumption over time, saving in response to positive transitory rainfall shocks (Paxons, 1992). Assets such as livestock are placed at the centre of the analysis and their use as informal savings may be examined in relation to child nutrition.

Forms of consumption smoothing are most feasible where idiosyncratic shocks are at a mean level, but less so for covariant shocks. However, the poor are often concentrated in areas where the reverse is true, effecting their ability to smooth consumption (Sinha and Lipton, 1999). Collecting event data at the household level will allow for the identification of covariate shocks

within a three-year period. The community questionnaire will also identify major events have affected the whole community. Covariate shocks worsen the functioning of the asset market, as people are less able to sell the assets they own in order to consume. As a result it is not possible to use asset values as proxies for vulnerability (Dercon, 2001).

The study will not however restrict the analysis to the use of assets, but will also extend to include the adjustment in time allocation and work hours. Recent evidence suggests that crop income uncertainty primarily affects household decision-making regarding farm and non-farm labour (Kochar,1999). Effects of crop income uncertainty may be mitigated by household adjustment to work hours. Section 7 will be used in conjunction with event data to examine increased participation in the labour market. Collection at the individual level will allow for the measurement of the changes in female and male participation.

The direct policy implications stemming from a focus upon vulnerability are wide and varied. It should be remembered that economic reforms often take place within the context of rising vulnerability, mediating their effects and altering their outcomes. Poverty reduction strategies devised to counter permanent poverty may need to be supplemented by policies to manage risk or to intervene in imperfect markets, such as insurance and credit. The degree to which formal schemes reinforce or replace informal mechanisms to cope with risk is relevant here.

References:

Dercon, Stefan (2001), '*Assessing vulnerability*', mimeo CSAE, Department of Economics, Oxford University

Kochar, A. (1999). *Smoothing Consumption by Smoothing Income: Hours-of-work Responses to Idiosyncratic Agricultural Shocks in Rural India*. The Review of Economics and Statistics, 81(1): 50-61.

Paxons, C. H. (1992) *Using Weather Variability to Estimate the Response of Savings to Transitory Income in Thailand*, American Economic Review, 82, 15-33.

Sinha and Lipton (1999), '*Damaging fluctuations, risks and poverty: a review*', background paper for the World Development Report 2000/2001, PRUS, University of Sussex, Brighton, UK

World Bank, (2000). *World Development Report 2000/2001. Attacking Poverty*. New York: Oxford University Press.

Section 9: Socio-economic status

It is anticipated that for analytical purpose the socio-economic section will be primarily used to construct a set of composite indices.

Wealth index: Intended to be the main instrument to measure the socio-economic status of the household.

Questions used in wealth index:

Variable	Source
Number of people per room	Filmer and Pritchett (1999)
Consumer durables (radio, fridge, bike, TV, motorbike, motor vehicle, mobile phone, land phone, XXXX, XXXX)	Filmer and Pritchett (1999)
Dwelling has: electricity, cement wall, sturdy roof	Filmer and Pritchett (1999)

Material of dwelling floor	Filmer and Pritchett (1999)
Main source of drinking water	Filmer and Pritchett (1999)
Toilet facility	Filmer and Pritchett (1999)
Fuel used for cooking	UNICEF

The above index draws on work undertaken by the World Bank and Macro International used to develop the wealth index cited in the UNICEF Multiple Indicator Cluster Surveys. It has been designed to include sufficient variables that vary substantially across the sample according to wealth. Type of cooking fuel performs well as indicator of wealth in DHS surveys and can be used to discriminate between household's in areas without electricity that therefore do not have TVs and fridges.

The index is constructed from (1) the number of people per room as a continuous variable; (2) a set of nine dummy consumer durable dummy variables, each equal to one if a household member owns a radio, fridge, bike, TV, motorbike, motor vehicle, mobile phone, land phone, or jewellery/watch (country partners have the option to add two additional consumer durable indicators, specific to the country context); (3) a set of three dummy variables equal to one if the house has electricity, brick or plastered wall, or a sturdy roof (such as corrugated iron, tiles or concrete); (4) a dummy variable equal to one if the dwelling floor is made of a finished material (such as cement, tile or a laminated material); (5) a dummy variable equal to one if the household's source of drinking water is piped into dwelling or yard; (6) a dummy variable equal to one if the household has a flushed toilet or pit latrine; (7) a dummy variable equal to one if the household uses electricity, gas or kerosene.

As far as possible the index will be used to estimate the "wealth" effect, narrowly defined, and not indirect effects on outcomes associated with, for instance, health. For example, the drinking water source dummy could be constructed to be equal to one on the basis of having a clean water supply i.e. piped, standpipe or tube well. Or the toilet facility dummy based upon being shared communally as opposed to being private. The reduction in illnesses in the household as the result of improved sanitation is not the same as the direct effect of socio-economic status, which is the object of this measure. Although it is recognised that some would contest this is exactly the type of effect that makes-up "wealth".

There are four possible approaches to constructing the index (Filmer and Pritchett, 1998). Firstly the dummy variables can be summed, thereby giving equal weights to each (but see below). A second method would be to construct a set of weights based upon the prices of various assets. This is feasible but requires the collection of asset price information, which is not currently included in the survey. It could potentially be based upon average national or regional relative prices. The third solution would be to input all asset variables as unconstrained variables in multivariate analysis. This clearly doesn't allow for bivariate analysis and it is not possible to separate the direct wealth effects from other indirect effects associated with the variables (Filmer and Pritchett, 1998). The fourth method is the statistical procedure of principle components to establish the scoring weights for the assets included in the index, the method adopted by Filmer and Pritchett (1998: 1999).

A further issue to be dealt with is that of scale equivalence. Weight is given to a variable both by the explicit weight attached it and by the range it covers. For example, if we add literacy (which ranges from about 20 to 100) to mean years of schooling (which ranges from around 2 to

10) then the bulk of the resulting composite index is accounted for by the literacy variable.[1] The implicit weights given by different ranges are removed by scaling the variable. The following formula will scale the variable over the range 0 to 1:

$$X_i^* \qquad \frac{X_i - X_{\min}}{X_{\max} - X_{\min}}$$

The minimum and maximum may be those taken from the data themselves. However, this procedure limits comparability across time and space. It is preferable to set the minima (usually 0) and the maxima (which is variable-specific). In the data set given here there are two variables for which scaling is required: rooms per person and consumer durables. For reasons explained below, we propose that consumer durables be summed into a single variable. This variable will range from 0-9 or 0-11 depending on the number of items covered. In this case comparability is ensured by scaling by the country-specific maximum (i.e. dividing the total by 9, 10 or 11).

Economic arguments may be advanced for using either prices or principle components analysis. But two counter-arguments may be made. First is the practical one that such indices are fairly insensitive to the weights used, so it is not worth devoting too many resources to fancy procedures. Second is the theoretical point that these economic arguments have less weight when choices are constrained (e.g. access to drinking water will be partly a function of geographic location). An econometric case may be made for not imposing any weights at all on the variables by entering them all in a regression. However, aside from the fact cross-tabulations of wealth are then not possible, the high degree of correlation between the various measures is almost certain to introduce multicollinearity, and so misleadingly undermine the significance of wealth.

The considerations in the last paragraph point to devising a simple arbitrary weighting system. However, there is good reason to not simply add up the scaled (0-1) values of the seventeen variables. There are between nine to eleven consumer durables. Using each one separately would give large weight to consumer durables against other aspects of welfare. It is also likely that there will be a bunching of scores at the low end (say 0-3 and the high end, say, 8-11) possibly resulting in either or both a positively skewed and bimodal distribution for the wealth index.

Hence the wealth index is proposed to be a simple average of the following three components:

- Housing quality, which is the simple average of scaled ooms per person, floor, roof and wall;
- Consumer durables, being the scaled sum of the consumer durable dummies; and
- Services, being the simple average of drinking water, electricity, toilet and fuel, all of which are 0-1 variables.

An example is attached in the Appendix.

Asset index: While the wealth index is primarily used as a measure of long-term socio-economic status the tabulation plan proposed the examination of effect of savings in the form of assets upon the welfare outcomes such as child nutrition, primarily in rural areas. The availability of assets affects both a household's livelihood strategy and it's ability to withstand shocks. The most liquid asset in rural areas is livestock, but other productive assets may be forms of savings themselves. Thus in addition to the wealth index it may be desirable to construct an asset index

[1] The example give here is from the UNDP's educational attainment variable from the HDI. In the first year this variable was used the UNDP failed to adjust to ensure scale equivalence.

based upon the following indicators in the survey: number of livestock owned, size of land owned, own dwelling, own consumer durables and own productive assets.

Livestock equivalent should be calculated using available relative prices from secondary data if good quality data are available and should be collected in the community survey if they are not. Similarly, a land equivalent scale could be calculated based upon the land type and quality and also a productive asset scale to make equivalent owning a tractor as compared to just a farm implement (such as a hoe). A single scaled variable in the range 0-1 should be made for the five areas listed above, and an asset index made from the simple average of these.

Farm-scale: In cross-tabulation analysis it anticipated to examine the possible association with the scale of the household farm and the impact upon welfare outcomes. It is recognised that this intentionally limits the analysis to rural areas. Variables used are: size of land used, use fertiliser and use irrigation.

The most simple farm-scale measure would be to calculate the size of the operational land (to include rented land) and rank households according to clusters, as farm-scales will vary according to agro-ecological zones. Using this cluster ranking the households would be assigned to the relevant quintiles. An extension would weight land holdings according to the level of inputs of fertiliser and irrigation. The current question relating to irrigation allows for the percentage of land irrigated to be categorised (0%, 25%, 50%, 75%, 100%). The question on chemical fertiliser should be amended to a similar form if it is to be used in the same way. Another important aspect to be taken into account in cross–tabulations is the land property regime. Land can be owned, borrowed, sharecropped or be under alternative property arrangements. The existing land tenure system may have a strong influence on farm productivity by conditioning the levels of investment and the access to capital sources (Hoff 1993).

Livestock in most rural settings is the most important household asset after land. Differently from land, livestock can be easily given in exchange for money or other goods when necessary. Very often farmers compensate fluctuations in income by selling and buying livestock, in order to maintain a stable level of consumption. (Rosenzweig and Wolpin, 1993; Dercon, 1998; Fafchamps, 1998). Thus, the record of the animals owned and its change over time will provide additional insights on the households' coping strategies and, eventually, on their living conditions.

References:

Dercon, S. (1998). *Wealth, Risk and Activity Choice: Cattle in Western Tanzania*. Journal of Development Economics, 55: 1-42

Dercon, S., (2000) *The impact of economic reforms on households in rural Ethiopia 1989-1995*, Centre for Study of African Economies, Oxford University.

Fafchamps, M., C. Udry and K. Czukas (1998). *Drought and Saving in West Africa: Are Livestock a Buffer Stock ?* Journal of Development Economics, 55: 273-305.

Filmer D. and Pritchett L., (1999) *The Effect of household wealth on educational attainment: Evidence from 35 countries,* Population and Development Review, V25 (1). Pp. 85-120. March

Filmer, D. and Pritchett, L., (1998) *Estimating wealth effects without expenditure data – or tears: an application to educational enrollments in states of India*, World Bank Working Paper 1994, http://econ.worldbank.org/docs/707.pdf

Hoff, K. Braverman A. and Stiglitz J. E. (1993) *The economics of rural organization : theory, practice and politics.* Washington: World Bank.

Rosenzweig, M.R. and K.I. Wolpin (1993). *Credit Market Constraints, Consumption Smoothing, and the Accumulation of Durable Production Assets in Low-Income Countries: Investment in Bullocks in India.* Journal of Political Economy, 101(2): 223-244.

UNICEF (2000) *End of Decade Assessment: Multiple Indicator Cluster Surveys* www.childinfo.org/MICS2/finques/gj00106a.htm

Section 11: Social capital

Using a livelihoods framework social capital is one type of asset (the others being human, financial, natural and physical). Even in income-poor households, levels of social connectedness may be high so that in times of need these resources can be called upon to reduce vulnerability or to gain other assets (example, accessing health services to maintain the health component of human capital). Research on how to effectively measure social capital in a valid and reliable manner is very recent. There is general acknowledgement that empirical measures should reflect current theory. Current theory of social capital emphasizes the difference between structural social capital (the connectedness or networks) and cognitive social capital (trust, reciprocity, sharing, etc). Latest efforts to measure social capital separate out these two components and the Young Lives project will follow this model. An additional important distinction is bridging vs. bonding social capital. Bridging takes place between communities while bonding takes place within the community. A most important stage in measuring social capital is to define community. In the YL project, community will be defined as detailed in the notes accompanying the community questionnaire. Although separation of bridging and bonding is potentially important it is not regarded as feasible within the YL project because it would add many questions to the household questionnaire. The area of reference for the social capital questions will be the community. Thus YL will measure bonding social capital. Note that YL questions on social capital try to exclude the measurement of the results of social capital (e.g. remittances). Many studies confuse the measurement of the existence of social capital with the gains made by having social capital (e.g. childcare sharing).

Research has not yet succeeded in identifying a way to measure a truly community or ecologic variable of social capital as this would need to be based on observations rather than aggregating individual perceptions of social capital (see Harpham et. al 2001). Thus, what we revert to is individuals' perception of levels of social capital in their respective communities. In the same way that the main caregiver of the index child will answer various questions about the nature of the household the caregiver will provide their perception of the level of social capital of the household. While it would be desirable to obtain more than one household respondent's perceptions of social capital (for example, a father's social capital may be different to that of a mother) the desire to limit the length of the household questionnaire precludes this. The caregiver is chosen as the appropriate respondent as it can be argued that her links and support have the most direct impact on the index child. However, mini-projects could explore different levels of social capital between household members.

The elements covered in the questionnaire are as follows:

Structural Social Capital	Cognitive Social Capital
Participation in organizations	Emotional, instrumental and
Occurrence of general collective action	informational support
	Social trust
Occurrence of bridging action	
	Social harmony
Degree of citizenship	Sense of belonging
	Fairness

Most questions are dichotomous (yes/no) and can be scored as zero for a low level of social capital and one for a higher level of social capital. Questions have been taken from best practice in the World Bank's social capital assessment tool and other surveys which empirically measure social capital (see Harpham et al 2001). The number of questions has been kept to a minimum in order to reduce the burden on the respondent.

Cross sectional analysis can include addressing questions of whether households with higher levels of social capital have better access to various services such as loans and health services. Cognitive social capital can be hypothesized to be associated with the mental health of the caregiver. Both forms of social capital may be associated with resilience to shocks experienced. The longitudinal analysis of changes in social capital over time will be of particular interest as we need to understand more about what changes levels of such assets over time.

Reference:

Harpham T., Grant E. and Thomas E. 2002 *Measuring social capital within health surveys: some key issues*. Health Policy and Planning 17(1): 106-111.

Section 13: Anthropometry

Child malnutrition remains a common problem in the developing world it is an important indicator of child welfare and an essential part of any multi-dimensional child specific poverty measure (see conceptual framework document). It is thus one the YLS principal outcome variables and is also associated with several of the other outcome variables, for example, morbidity and cognitive development (Pollitt et al 1994, Lasky et al 1981, Sigman et al 1989). It is widely accepted that for practical purposes anthropometry is the most useful tool for assessing the nutritional status of children, although the extent to which genetic factors, both within and between populations, may affect growth cannot be ignored (WHO 1986). The interpretation of anthropometric measures as indicators of nutritional status requires that values from the study population be compared to healthy, well nourished reference population, new growth charts are currently being developed (WHO 2000). In the YLS only height and weight will be measured. These measures are quick, simple, require only limited training and are the more precisely measured than, for example, skinfolds and circumferences (Ulijaszek and Kerr 1999). Measurement error varies from one survey to another but surveys report minimal bias when

training is adequate (see training manual) and measurements are taken more than once (Martorell et al 1976, Pelletier et al 1991).

References:

Martorell R, Yarbrough C, Lechtig A, Delgado H, Klein RE. *Upper arm anthropometric indicators of nutritional status*. Am J Clin Nutr. 1976 Jan;29(1):46-53

Lasky RE, Klein RE, Yarbrough C, Engle PL, Lechtig A, Martorell R. *The relationship between physical growth and infant behavioral development in rural Guatemala.* Child Dev. 1981 Mar;52(1):219-26.

Pelletier DL, Msukwa LA. *The use of national sample surveys for nutritional surveillance: lessons from Malawi's National Sample Survey of Agriculture*. Soc Sci Med. 1991;32(8):887-98

Pollitt E, Watkins WE, Husaini MA. *Three-month nutritional supplementation in Indonesian infants and toddlers benefits memory function 8 yrs later*. Am J Clin Nutr. 1997 Dec;66(6):1357-63

Sigman M, Neumann C, Baksh M, Bwibo N, McDonald MA. *Relationship between nutrition and development in Kenyan toddlers*. J Pediatr. 1989 Sep;115(3):357-64.

Ulijaszek SJ, Kerr DA. *Anthropometric measurement error and the assessment of nutritional status*. Br J Nutr. 1999 Sep;82(3):165-77.

World Health organisation. *Use and Interpretation of anthropometric indicators of nutritional status*. Bull WHO. 1986. 64 (6):929-941

WORLD HEALTH ORGANISATION 2000. *The growth chart based on centiles for breast fed babies*.

Topics exclusive to the 6-17.9 month old questionnaire

Section 3: pregnancy delivery and breastfeeding

Birth weight: Birth weight is known to be a powerful predictor (and confounder) of infant growth, morbidity and mental development (Aylward et al 1989) and infants born with low birth weight (less than 2500g) begin life immediately disadvantaged. The incidence of low birth weight is one of the indicators for monitoring the health goals established by the World Summit for Children and it is an internationally recognised indicator of the well being of neonates (Boerma et al 1996)

The most reliable sources of birth weight data are hospital, clinic or maternity home **documents** and, where possible, these will be used as the data source in the YLS. It is likely that in many sites caretakers will not have these records or they may not exist; in such cases **recalled data** will have to be substituted. Studies have found that mothers in developing countries, whose babies were born in hospital, can recall birth weights accurately but that these need to be obtained at as early an age as possible (Gaskin et al 1997, Gofin and Adler 2000). It should be noted that there is often clustering in recalled weights and in data from health centres; which increases the potential for misclassification of low birth weight babies (Boerma et al 1996, Robles and Goldman 1999).

Babies in developing countries are often not born at a health facility, yet an analysis of DHS data found that many women who delivered at home recalled birth weights. These weights are likely to be inaccurate as it is unusual for children born at home to be weighed at birth. The reported data are usually weights obtained at post partum check-ups or estimated by the birth

attendant (Robles and Goldman 1999). In addition to asking about birth weight the YLS also collects data on the **perceptions of birth size**, this is in the expectation it will serve as a proxy for birth weight in children born at home. An analysis of 15 DHS surveys, compared birth size and recalled birth weight, and found that most infants reported as very small were classified as low birth weight using maternal recall. Only 29% of low birth weight infants, however, were considered very small by their mothers (Boerma et al 1996). Thus birth size data is a reasonably good indicator of birth weight at the aggregate level (Boerma et al 1996, Eggleston et al 2000, Moreno and Goldman 1990), but misclassification is too high for use at the individual level, this must be noted in the analysis of the YLS data.

Antenatal care: Some experts have questioned the impact of elements of the antenatal care package (McDonagh, 1996; Villar and Bergsjø, 1997; Carroli et al 2001). Few would argue with the benefits of regular care (including counselling on nutrition and screening for certain disorders) on women's and infant's health, and increasing antenatal care coverage is a policy aim in many developing countries. Collecting data on antenatal care allows the YLS to explore access and utilisation of services. To do this information is needed on the **frequency of visits** and when the **first visit** was made; as these determine whether use was appropriate or not.

Pregnancy wanted: Unintended pregnancy is frequently considered to be a social problem, but its association with specific negative consequences is often not measured and levels have implications for family planning policies. Having an unintended pregnancy was associated with late or no antenatal care in Kenya (Magadi et al 2000), Ecuador (Eggleston 2001) and Zimbabwe (Fawcus et al 1992) and a study using DHS data for 5 countries found that in three whether or not the child was wanted was linked to mortality and educational attainment of the child and in one to nutrition (Montgomery et al 1997). Survey measures of whether or not the pregnancy was wanted have been criticised (Bankole and Westoff 1998, Bongaarts 1990, Hummer et al 1995), most frequently because it is assumed that as the time elapsed since pregnancy increases respondents become more likely to report that the pregnancy was intended. This is attributed to a failure to recall negative attitudes accurately over time or because judgements have changed as a result of experiences with a child (Bankole and Westoff 1998). Only one study was located that measured the validity of survey questions on whether or not the pregnancy was wanted in a developing country context (Williams et al 2001). Survey data was compared with in depth data and generally consistency was high. It was greater for a dichotomous measure (intended/unintended) (94%), than a more detailed variable distinguishing intended, mistimed and unwanted pregnancies (84%). Because of the higher consistency the **dichotomous measure (intended/unintended)** is used in Young Lives.

Pregnancy and delivery problems: Problems during pregnancy and delivery such as poor nutrition, anaemia, hemorrhage or eclampsia are associated with infants health at birth and with later development and mental illnesses such as schizophrenia (Geddes and Lawrie 1995). Long-term complications for the mother can include chronic pain, impaired mobility, and damage to the reproductive system and infertility which could have a potential impact on child welfare. Studies in developing countries have explored the sensitivity and specificity of different combinations of recalled symptoms to measure obstetric complications, and have shown insufficient validity (except for convulsions and bleeding) vis-à-vis biomedical measures (Ronsman et al 1997, Stewart et al 1996, Sloan et al 2001, Stewart and Festin 1995, Filippi et al 2000). No studies were located that explored using simple non-symptom based questions to detect obstetric complications.

A maternal mortality expert advised that, as symptom based questions are problematic and time consuming, a **general health question** combined with a question on **type of delivery** (using emergency caesarean as a proxy for obstetric complications) is appropriate for the YLS (Fillipi

personal communication). The questions on general health will probably result in a lot of misclassification, which must be considered when the data is being analysed. Across country comparisons will be difficult as reports are likely to vary by the medical and socio-cultural context within which childbirth takes place. Using caesarean section as a proxy for obstetric complications will also result in misclassification in settings where health services access is high, but is a good proxy where access to care is low.

As well as acting as a proxy for obstetric complications, collecting data on **type of birth** is important because of the potential impact on mother-child interactions such as feeding, showing affection and involvement in care activities (DiMatteo et al 1996). These factors are important in understanding the YLS outcome indicators such as cognitive development, life skills and mental morbidity.

Place of birth: The single most effective way to reduce obstetric complications (the importance of which is described above) is to ensure that a health professional with the skills to conduct a safe, normal delivery and manage complications is present during childbirth. Research has shown that even trained traditional birth attendants (TBAs) have not significantly reduced these risks (Safe Motherhood Initiative 2001) and there is a continuing controversy over the proper role of TBAs given cultural constraints and their lack of education (Rosario, 1995, Minden and Levitt, 1996). The YLS collects data on place of birth i.e. **home, hospital, other health facility etc** and **who attended the birth,** for descriptive purposes, to explore service use, risk factors, as a screen for the caesarean section question and also as a cross check for recalled birth weight. It is unlikely that there will be misclassification as place of birth is objective and such a major event that recall error is unlikely. The birth attendants question must be interpreted with care as the validity of self reports are not known and mothers' may not reliably determine skilled from unskilled providers. For example a traditional healer may be called a "doctor," a traditional birth attendant a "sister" or "nurse," and hence be included in the "skilled birth attendant" category (Mothercare 1999).

Prematurity: Pre-term birth (i.e. a gestational length of less than 37 completed weeks) is linked to low birth weight, is a well known indicator of an infant's health at birth and is highly predictive of morbidity in the first few months of life (McCormick 1985). Only one study was located that assessed whether retrospectively recalled data on gestational age is accurate (Miller et al 1993). Asking whether the baby was born on time or premature? (as in the DHS) was found to be too subjective and data anomalies suggested miss reporting of prematurity status, particularly when recall periods are long, in rural areas and among younger mothers (Miller et al 1993). Questions on prematurity should provide a consistent definition of the concept and the YLS asks whether the infant **was born before expected**, as a potentially large fraction of women will not be able to record numerical gestational lengths, and then by **how many weeks**.

Number of children born and still living: Collecting information on living and dead children allow the birth order of the index child to be calculated as well as providing information about parity, total family size, sex of siblings and death clustering (to understand death clustering collecting data on the age at death is also important). High parity is consistently associated with low birth weight, infant mortality and postnatal growth (Haaga 1995) and with maternal nutrition and health status (Leslie 1995). Interactions between decisions about family size and those about human capital investment (e.g. decisions on expenditure on children's health or schooling) are often assumed. Studies in developing countries have found the number of siblings associated with educational enrolment, and attainment, child work, fostering and nutritional status (Patrinos and Psachariopulos 1997, De Graff et al 1996, Lloyd and Desai 1992, Cherian 1990). Underreporting of children who died soon after birth is common when recording fertility histories. To reduce this inaccuracy the YLS asks for **the total number girls and boys given**

birth to prompting to include babies **who cried or showed some sign of life but only survived a few hours or days**. For living children underreporting is common for those who live away from home and the caretaker is asked for the **number of children still living** and prompted to **include those living outside the home.**

Breastfeeding: Breastfeeding is strongly associated with several of the YLS outcome variables. These include child morbidity (Howie et al 1990, Feachem and Koblinsky 1984, Kirkwood and Morris 1992), nutritional status (Waterlow 1994, Adair 1993, Martinez 1994), and cognitive development (Lanting et al 1994, Lucas et al 1992, Horwood et al 1998, Anderson et al 1999) and may also be protective against obesity (Von Kries et al 1999). Questions on breastfeeding are common in household surveys. The YLS ask about **ever breastfeeding** and **duration of breastfeeding**. The usefulness of these questions is limited: First it can be anticipated that almost all infants will have been 'ever breastfed' and second just asking about duration hides vast and important differences in exclusivity. Categorising exclusivity retrospectively results in too many errors and, as the YLS children are all over 6 months in the first round, current breastfeeding questions are not relevant and exclusivity cannot be measured. A further option is to ask whether the child was exclusively breastfed to six months, the recommended duration (WHO 2001), this could be asked using a clear definition of exclusivity, a near universal negative answer would be expected making the question redundant.

Little attention has been focused on the accuracy of recalled duration, but the scanty evidence suggests it is reasonable. A study of Bedouin women found that even after 18 months, recall of breastfeeding duration was accurate (Launer et al 1992), this is similar to studies in developed countries (Eaton-Evans and Dugdale 1986). In Brazil duration was overestimated by up to 21% with misclassification increasing as recall period lengthened (Huttly et al 1990). When the YLS is analysed it should be noted that, as data is collected for a wide age range, recall periods differs the data may suffer differential misclassification.

Complementary feeding (optional): As a baby grows and becomes more active, breast milk alone is not sufficient to meet its full nutritional requirements. From 6 months, solid and semi-solid foods are needed to complement breast milk intake to meet essential nutrient and energy requirements (Brown et al 1998). Good complementary feeding practices have been linked to reduced malnutrition (Caulfield et al 1999), which is a YLS outcome variable and is itself linked to early growth retardation, delayed motor development, impaired cognitive function and school performance (Pollitt et al 1994, Lasky et al 1981, Sigman et al 1989, Matorell et al 1992). Measuring nutritional intake is beyond the scope of the YLS project; more feasible is where it is appropriate to measure the intake of animal products. The consumption of bio-available nutrients from animal products is thought to be the only way of ensuring sufficient vitamin A, zinc and iron consumption (essential for child health and development and the most common and serious micro-nutrient deficiencies) in the absence of fortification or supplementation (Brown et al 1989). It would also be desirable to collect data on the age at which complementary feed was initiated but problems of recall and of variable definitions of food make this unfeasible, for example studies have found large discrepancies on recall of the time of starting non breast-milk feeds (Eaton-Evans and Dugdale 1986).

References:

Adair L, Popkin BM, VanDerslice J et al. 1993. *Growth Dynamics during the first two years of life: a prospective study in the Philippines*. *Europ J Clin Nutr*. 47:42-51.

Anderson JW, Johnstone BM, Remley DT, 1999. *Breast-feeding and cognitive development: a meta-analysis*. *Am J Clin Nutr.* 70(4): 525-35

Aylward GP, Pfeiffer SI, Wright A, Verhulst SJ. *Outcome studies of low birth weight infants published in the last decade: a meta-analysis.* J Pediatr. 1989 Oct;115(4):515-20.

Bankole A, Westoff CF. *The consistency and validity of reproductive attitudes: evidence from Morocco*. J Biosoc Sci. 1998 Oct;30(4):439-55.

Boerma JT, Weinstein KI, Rutstein SO, Sommerfelt AE. *Data on birth weight in developing countries: can surveys help?* Bull World Health Organ. 1996;74(2):209-16.

Bongaarts-J. *The measurement of wanted fertility*. Pop Dev Rev. 1990 6(3): 487-504.

Brown K, Dewey K, Allen L. 1998. *Complementary feeding of young children in developing countries: a review of current scientific knowledge. WHO/NUT/98.1*, Geneva.

Carroli G, Villar J, Piaggio G, Khan-Neelofur D, Gulmezoglu M, Mugford M, Lumbiganon P, Farnot U, Bersgjo P. *WHO systematic review of randomised controlled trials of routine antenatal care*. Lancet. 2001 May 19;357(9268):1565-70.

Caulfield LE, Huffman SL, Piwoz EG. 1999. *Interventions to improve intake of complementary foods by infants 6 to 12 months of age in developing countries: Impact on growth and on the prevalence of malnutrition and potential contribution to child survival*. *Food Nut Bull.* 20(2): 183-200

Cherian-VI. *Family size and academic achievement of children*. JOURNAL OF FAMILY WELFARE. 1990 Dec; 36(4):56-60.

DeGraff-DS; Bilsborrow-RE; Herrin-AN: *Children's education in the Philippines: does high fertility matter?* POPULATION RESEARCH AND POLICY REVIEW. 1996 Jun; 15(3):219-47.

DiMatteo MR, Morton SC, Lepper HS, Damush TM, Carney MF, Pearson M, Kahn KL. *Caesarean childbirth and psychosocial outcomes: a meta-analysis*. Health Psychol. 1996 Jul;15(4):303-14.

Eaton-Evans J, Dugdale AE. *Recall by mothers of the birth weights and feeding of their children.* Hum Nutr Appl Nutr. 1986 Jun;40(3):171-5.

Eggleston E, Tsui AO, Fortney J. *Assessing survey measures of infant birth weight and birth size in Ecuador.* J Biosoc Sci. 2000 Jul;32(3):373-82

Eggleston E. *Unintended pregnancy and women's use of prenatal care in Ecuador*. Soc Sci Med. 2000 Oct;51(7):1011-8

Fawcus SR, Crowther CA, Van Baelen P, Marumahoko J. *Booked and un-booked mothers delivering at Harare Maternity Hospital, Zimbabwe: a comparison of maternal characteristics and foetal outcome*. Cent Afr J Med. 1992 Oct;38(10):402-8.

Feachem RG, Koblinsky MA. 1984. *Interventions for the control of diarrhoeal diseases among young children: promotion of breastfeeding. Bull World Health Org*. 62:271-291

Filippi V, Ronsmans C, Gandaho T, Graham W, Alihonou E, Santos P. *Women's reports of severe (near-miss) obstetric complications in Benin*. Stud Fam Plann. 2000 Dec;31(4):309-24

Gaskin P, Walker SP, Forrester TE, Grantham-McGregor SM. *The validity of recalled birth weight in developing countries.* Am J Public Health. 1997 Jan;87(1):114

Geddes JR, Lawrie SM. *Obstetric complications and schizophrenia: a meta-analysis*. Br J Psychiatry. 1995 Dec;167(6):786-93

Gofin R, Neumark YD, Adler B. *Birth weight recall by mothers of Israeli children*. Public Health. 2000 May;114(3):161-3

Haaga-JG. *Family planning as a promoter of child survival and growth*. In: Child growth and nutrition in developing countries: priorities for action, edited by Per Pinstrup-Andersen, David Pelletier, Harold Alderman. Ithaca, New York, Cornell University Press, 1995. :176-98.

Horwood LJ, Fergusson DM. *Breastfeeding and later cognitive and academic outcomes*. Paediatrics. 1998 Jan;101(1):E9.

Howie PW, Forsyth JS, Ogston SA, Clark A, Florey CD. *Protective effect of breast feeding against infection*. BMJ. 1990 Jan 6;300(6716):11-6.

Hummer RA, Schmertmann CP, Eberstein IW, Kelly S. *Retrospective reports of pregnancy wantedness and birth outcomes in the United States*. Soc Sci Quarterly. 1995: 76(2):402-418

Huttly SR, Barros FC, Victora CG, Beria JU, Vaughan JP. *Do mothers overestimate breast feeding duration? An example of recall bias from a study in southern Brazil*. Am J Epidemiol. 1990 Sep;132(3):572-5

Hussain TM, Smith JF. *The relationship between maternal work and other socioeconomic factors and child health in Bangladesh*. Public Health. 1999 Nov;113(6):299-302.

Lanting CI, Fidler V, Huisman M, Touwen BC, Boersma ER. *Neurological differences between 9-year-old children fed breast-milk or formula-milk as babies*. Lancet. 1994 Nov 12;344(8933):1319-22.

Lasky RE et al. 1981. *The relationship between physical growth and infant behavioural development in rural Guatemala*. *Child development,*52:219-226

Launer LJ, Forman MR, Hundt GL, Sarov B, Chang D, Berendes HW, Naggan L. *Maternal recall of infant feeding events is accurate*. J Epidemiol Community Health. 1992 Jun;46(3):203-6.

Leslie-J. *Improving the nutrition of women in the Third World*. In: Child growth and nutrition in developing countries: priorities for action, edited by Per Pinstrup-Andersen, David Pelletier, Harold Alderman. Ithaca, New York, Cornell University Press, 1995. :117-38.

Lloyd-CB; Desai-S. *Children's living arrangements in developing countries*. POPULATION RESEARCH AND POLICY REVIEW. 1992; 11(3):193-216.

Lucas A, Morley R, Cole TJ, Lister G, Leeson-Payne C. *Breast milk and subsequent intelligence quotient in children born preterm*. Lancet. 1992 Feb 1;339(8788):261-4.

Magadi MA, Madise NJ, Rodrigues RN. *Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities*. Soc Sci Med. 2000 Aug;51(4):551-61.

Martines C, Habicht JP, Ashworth A, Kirkwood BRJ. 1994. *Weaning in southern Brazil: is there a weaning's dilemma? Nutrition.*. 124(8):1189-98

Martorell R et al. 1992. *Long-term consequences of growth retardation during early childhood*. In: Hernandez M, Argente J, eds. *Human growth: basic and clinical aspects.* Amsterdam, Elsevier Science Publishers, pp.143-149

McDonagh M. *Is antenatal care effective in reducing maternal morbidity and mortality?* Health Policy Plan. 1996 Mar;11(1):1-15.

McCormick MC. *The contribution of low birth weight to infant mortality and childhood morbidity.* N Engl J Med. 1985 Jan 10;312(2):82-90.

Montgomery-MR; Lloyd-CB; Hewett-PC; Heuveline-P. *The consequences of imperfect fertility control for children's survival, health, and schooling*. Calverton, Maryland, Macro International, Demographic and Health Surveys [DHS], 1997 Dec. viii, 65 p. (Demographic and Health Surveys Analytical Reports No. 7).

Moreno L, Goldman N. *An assessment of survey data on birth weight*. Soc Sci Med. 1990;31(4):491-500

Mothercare. *Safe Motherhood Indicators Lessons Learned in Measuring Progress*. Mothercare matters. Volume 8, No. 1—May 1999

Miller JE, Goldman N, Moreno L. *An evaluation of survey data on birthweight and prematurity status*. Soc Biol. 1993 Spring-Summer;40(1-2):131-46

Minden, M. and Levitt, M.J. *The right to know: women and their traditional birth attendants*. In: Murray, S.F., ed. Midwives and Safer Motherhood. London: Mosby (1996).

Patrinos-HA; Psacharopoulos-G. *Family size, schooling and child labour in Peru -- an empirical analysis*. JOURNAL OF POPULATION ECONOMICS. 1997; 10(4):387-405

Pollitt E. 1994. *Stunting and delayed motor development in rural West Java. American journal of human biology,* 6:627-635

Robles A, Goldman N. *Can accurate data on birth weight be obtained from health interview surveys?* Int J Epidemiol. 1999 Oct;28(5):925-31

Ronsmans C, Achadi E, Cohen S, Zazri *A. Women's recall of obstetric complications in south Kalimantan, Indonesia*. Fam Plann. 1997 Sep;28(3):203-14.

Rosario, S. *Traditional birth attendants in Bangladeshi villages: cultural and sociological factors.* International Journal of Gynaecology & Obstetrics 50(Supplement 2):S145-S152 (1995).

Safe Motherhood Initiative. 2001. http://www.safemotherhood.org/init_attendance.htm

Sigman M et al. 1989. *Relationship between nutrition and development in Kenyan toddlers. Journal of paediatrics,* 15:357-364

Sloan NL, Amoaful E, Arthur P, Winikoff B, Adjei S. *Validity of women's self-reported obstetric complications in rural Ghana.* J Health Popul Nutr. 2001 Jun;19(2):45-51.

Stewart MK, Festin M. Validation study of women's reporting and recall of major obstetric complications treated at the Philippine General Hospital. Int J Gynaecol Obstet. 1995 Jun;48 Suppl:S53-66

Stewart MK, Stanton CK, Festin M, Jacobson N. Issues in measuring maternal morbidity: lessons from the Philippines Safe Motherhood Survey Project. Stud Fam Plann. 1996 Jan-Feb;27(1):29-35

Villar J, Bergsjo P. Scientific basis for the content of routine antenatal care. I. Philosophy, recent studies, and power to eliminate or alleviate adverse maternal outcomes. Acta Obstet Gynecol Scand. 1997 Jan;76(1):1-14

Von Kries R, Koletzko B, Sauerwald T, von Mutius E, Barnert D, Grunert V, von Voss H. Breast feeding and obesity: cross sectional study. BMJ. 1999 Jul 17;319(7203):147-50.

Waterlow JC. Causes and mechanisms of linear growth retardation (stunting). Eur J Clin Nutr 1994;48:S1-4.

Williams LS, Sobieszczyk T and Perez A. Consistency between survey and interview data concerning pregnancy wantedness in the Philippines. Studies Fam Plan. 2001 32(3):244-253

WORLD HEALTH ORGANISATION. 2001a. The optimal duration of exclusive breastfeeding: results of a WHO systematic review. *http://www.who.int/inf-pr-20001/en/note2001-07.html*

Section 4: Child care

The way that caregivers relate and respond to young children and mediate their contact with the environment is felt to directly affect the formation of neural pathways. The environment affects not only the number of brain cells and the number of connections between them, but the way these connections are "wired" (Perry 1998). A child's capacity for mental and social development hinges on biological systems shaped by early experience and attachment (Chisholm 1998, O'Connor et al 2000). The importance of experiences and attachments means collecting information on who cares for the child is important to understand child development, but to be useful this information must include measures of quality of care and time spent with different caregivers.

Collecting data on quality is not possible in the YLS as the caretaker may not know what happens when the child is out of their care. Collecting data on time spent with different caregivers is also problematic where local perceptions of time need translating. The YLS childcare questions thus focus on whether the caretaker has a wide support network rather than focusing on childcare as a determinant of child development.

References:

Brockerhoff M, Hewett P. Inequality of child mortality among ethnic groups in sub-Saharan Africa. Bull World Health Organ. 2000;78(1):30-41

Chisholm K. A three year follow-up of attachment and indiscriminate friendliness in children adopted from Romanian orphanages. Child Dev. 1998 Aug;69(4):1092-106.

O'Connor TG, Rutter M, Beckett C, Keaveney L, Kreppner JM. The effects of global severe privation on cognitive competence: extension and longitudinal follow-up. English and Romanian Adoptees Study Team. Child Dev. 2000 Mar-Apr;71(2):376-90.

Perry BD, Pollard R.Homeostasis, stress, trauma, and adaptation. A neurodevelopmental view of childhood trauma. Child Adolesc Psychiatr Clin N Am. 1998 Jan;7(1):33-51, viii.

Section 5: Child health

Physical morbidity and injury: Health status is an important indicator of child welfare and an essential part of any multi-dimensional child specific poverty measure (see conceptual framework document). Physical morbidity is thus one the YLS principal outcome variables. It is also associated with several of the other outcome variables, for example growth and cognitive development (Guerrant et al 1999, Kossmann et al 2000), and morbidity is prevalent in developing countries. There is no standard measure of 'health status' for individuals or populations. In children under five the main causes of mortality and morbidity are Diarrhoea, Malaria, Measles, Acute Lower Respiratory Infection (mostly pneumonia) and Malnutrition (Murry and Lopez 1996). Focusing on more common illnesses allows data to be collected on a reasonable number of illness episodes within the YLS sample size.

In 1999 injury accounted 14% of the global burden of disease and this is expected to grow to 20% by 2020. Ninety-four percent of the global burden of injury occurs in the developing world, it particularly affects children, young people and women, and injury is a priority problem of poor people around the world (Murry and Lopez 1996, WHO 2000). Population based surveys on injury have been scarce in developing countries. The YLS provides an opportunity to explore injury and their long term impact.

Longitudinal measures of morbidity and injuries: In order to get a composite measure of health status that does not just focus on severe illness episodes the caretaker is asked to **rate the overall health status** of the child (in the anthropometric section they are also asked to rate the child's growth). A subjective account of general health is one of the most frequently used health status measures. Substantial research evidence from studies of the elderly in developed country suggests self-rated health is meaningful, provides valid and reliable data (Lundberg and Manderbacka 1996) and isn't affected by acute transitory illness (Manderbacka et al 1998). A review of 27 adult studies found global self-rated health strongly associated with more objective measures of morbidity and morality (Idler and Benyami 1997). It must be noted that studies have found the interpretation of good or bad health varies by, for example, age or sex (Krause and Jay 1994, Chandola and Jenkinson 2000).

Little is known about methodological issues around collecting injury data in developing countries. Studies from developed countries (Harel et al 1994, Cash and Moss 1972) and the one developing country study located (Mock et al 1999) found a decline in estimated injury rates as the recall period increased. Reporting suffered less from recall bias for serious injuries but was less complete for younger children (0-4 years). The studies conclude that a recall period of 1-3 months should be used to measure injury but a longer recall period is appropriate in studies capturing more **serious injury** episodes. As the YLS asks about a **life threatening illness or injury** and **long term health problems** severe recall bias is unlikely (recall bias is further reduced by prompting for **severe burns, broken bones and severe head injuries**). All injury measures are likely to be an underestimate as it can be anticipated that there will be relative under reporting of sensitive mechanisms such as injury through abuse. The interpretation of this data must be done with caution as reports of life threatening or long term illnesses or injuries are likely to be influenced by complex and contextual dynamics. Data on **health service use** for the severe illness or injury episode is also collected.

Cross sectional morbidity measures: Household studies are extensively used to collect morbidity data. As in other household surveys the YLS collects morbidity data cross-sectionally referring to a specific recall period, the analysis implications of this are outlined in the introduction. It must be noted that morbidity is often seasonal and it is hazardous to compare the results of surveys conducted at different times of the year.

Studies have found that data collected from mothers is more accurate and complete than data collected from other household members (Ross and Vaughn 1986) and eliciting information on illness specific symptoms or signs is more objective than collecting information on general illness. However evidence suggests that questions which prompt for specific symptoms are more accurate if they are preceded by a more general open-ended question (Ross et al 1994). The YLS thus asks about general illness and then collects data on major danger signs of childhood illness, some such as cough and rapid/difficult breathing will be combined in analysis to form a composite variable. To limit recall bias and to allow comparability with DHS the recall period is **24 hours**. Studies have found a direct relationship between the length of recall and the amount of reporting error (Alam et al 1989, Ramakrishnan et al 1999). For diarrhoea under reporting is as high as 44% with a 7 day recall. It should be noted that studies have found that reporting errors differ considerably between countries (Boerma et al 1991, Forsberg et al 1993) and to allow comparability it is important to reduce them by using the shortest recall period possible.

The results of morbidity surveys appear to be highly sensitive to changes in methodology, such as in illness definitions or recall period (Ross and Vaughn 1986), and to cultural factors such as the illness classification system (Kroeger 1983). If a retrospective interview is to result in an accurate 'diagnosis', the illness of interest should have a distinct set of signs and symptoms recognisable to the informant (Coldham et al 2000), in the case of common childhood illnesses

this restricts surveys to measles and diarrhoea, measles is now rare in many settings. Studies have found asking about rash and fever for measles, and liquid stools for diarrhoea, highly predict the medical diagnosis (sensitivity) and exclude other diagnoses (specificity); but using maternal reports to diagnosis ALRI and malaria is more problematic (Kalter et al 1999, Kalter et al 1991, Alonso et al 1987). This must be considered an acknowledged in the analysis of the non-diarrhoeal symptoms

Immunisation: In the last few decades immunisation has reduces the global burden of disease caused by vaccine preventable diseases from 23 to 10%. Data on immunisation status gives us information about how well health services are accessed and utilised by our households and is important descriptive information. Estimates of immunisation status in developing countries is typically made on a **card plus history** basis, combining information obtained from vaccination cards with information from mothers' reports, for children for whom cards are not available. The YLS will also take this approach as studies suggest that mother's reports are reasonably accurate (Langsten and Hill 1998, Goldman and Pebley 1994, Valdaez and Weld 1992, Gareballah and Loevinsohn 1989). For example in Egypt between 83-98% of mothers gave reports consistent with the card information, the level varied by immunisation and age (highest for BCG and older children and lowest for measles) (Langsten and Hill 1998). In Sudan illiterate mothers reports on measles vaccinations were 87% sensitive and 79% specific compared with the vaccination cards (Gareballah and Loevinsohn 1989) and in Costa Rica only 14% of mothers mis-estimated the number of vaccinations by three or more doses (Valadez and Weld 1992). Whilst small these errors limit the use of maternal recall data to determine and individual child's vaccination status. In some settings recall is more accurate than data from cards in India, for example, the data on the cards was frequently found to be incomplete and inaccurate (Ramakrishnan et al 1999). The YLS only collects data about **BCG** vaccinations (because it is the most reliably reported) and **measles** (because it has the highest health burden of the vaccine preventable diseases).

References:

Alam N, Henry FJ, Rahaman MM. Reporting errors in one-week diarrhoea recall surveys: experience from a prospective study in rural Bangladesh. Int J Epidemiol. 1989 Sep;18(3):697-700

Alonso PL, Bowman A, Marsh K, Greenwood BM. The accuracy of the clinical histories given by mothers of seriously ill African children. Ann Trop Paediatr. 1987 Sep;7(3):187-9.

Barnett SW. 1995. Long term effects of early childhood programs on cognitive school outcomes. The future of children. 5:25-30.

Behrman RE, Robert M, kliegman RM, Jenson HB. Nelson textbook of pediatrics. 16th edition. 2000. WB Saunders Philadelphia

Boerma JT, Black RE, Sommerfelt AE, Rutstein SO, Bicego GT. Accuracy and completeness of mothers' recall of diarrhoea occurrence in pre-school children in demographic and health surveys. Int J Epidemiol. 1991 Dec;20(4):1073-80.

Cash WS, Moss AJ. Optimum recall period for reporting persons injured in motor vehicle accidents. Data Eval methods Res. 1972; 2(50):1-33

Coldham C, Ross D, Quigley M, Segura Z, Chandramohan D. Prospective validation of a standardized questionnaire for estimating childhood mortality and morbidity due to pneumonia and diarrhoea. Trop Med Int Health. 2000 Feb;5(2):134-44.

Campbell FA, Pungello EP, Miller-Johnson S, Burchinal M, Ramey CT. The development of cognitive and academic abilities: growth curves from an early childhood educational experiment. Dev Psychol. 2001 Mar;37(2):231-42.

Chandola T, Jenkinson C. Validating self-rated health in different ethnic groups. Ethn Health. 2000 May;5(2):151-9.

Epir S, Yalaz K. Urban Turkish children's performance on the Denver Developmental Screening Test. Dev Med Child Neurol. 1984 Oct;26(5):632-43.

Forsberg BC, van Ginneken JK, Nagelkerke NJ. Cross-sectional household surveys of diarrhoeal diseases--a comparison of data from the Control of Diarrhoeal Diseases and Demographic and Health Surveys programmes. Int J Epidemiol. 1993 *Dec;22(6):1137-45.*

Gareaballah ET, Loevinsohn BP. The accuracy of mother's reports about their children's vaccination status. Bull World Health Organ. 1989;67(6):669-74.

Goldman N, Pebley AR. Health cards, maternal reports and the measurement of immunization coverage: the example of Guatemala. Soc Sci Med. 1994 Apr;38(8):1075-89

Grantham McGregor SM, Walker SP, Chang SM, Powell CA. Effects of early childhood supplementation with and without stimulation on later development in stunted Jamaican children. Am.J.Clin.Nutr. 1997;66(2):247-53.

Grantham-McGregor SM, Pollitt E, Wachs TD, Meisels ST, Scott K. 1999. Summary of the scientific evidence on the nature and determinants of child development and their implications for programmatic interventions with young children. Food and Nutrition Bulletin, No 10. The United Nations University.

Greer S, Bauchner H, Zuckerman B. The Denver Developmental Screening Test: how good is its predictive validity? Dev Med Child Neurol. 1989 Dec;31(6):774-81.

Guerrant DI, Moore SR, Lima AA, Patrick PD, Schorling JB, Guerrant RL. Association of early childhood diarrhea and cryptosporidiosis with impaired physical fitness and cognitive function four-seven years later in a poor urban community in northeast Brazil. Am J Trop Med Hyg. 1999 Nov;61(5):707-13

Harel Y, Overpeck MD, Jones DH, Scheidt PC, Bijur PE, Trumble AC, Anderson J. The effects of recall on estimating annual nonfatal injury rates for children and adolescents. Am J Public Health. 1994 Apr;84(4):599-605.

Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. J Health Soc Behav. 1997 Mar;38(1):21-37.

Kalter HD, Hossain M, Burnham G, Khan NZ, Saha SK, Ali MA, Black RE. Validation of caregiver interviews to diagnose common causes of severe neonatal illness. Paediatr Perinat Epidemiol. 1999 Jan;13(1):99-113

Kalter HD, Gray RH, Black RE, Gultiano SA. Validation of the diagnosis of childhood morbidity using maternal health interviews. Int J Epidemiol. 1991 Mar;20(1):193-8

Kossmann J, Nestel P, Herrera MG, El-Amin A, Fawzi WW. Undernutrition and childhood infections: a prospective study of childhood infections in relation to growth in the Sudan. Acta Paediatr. 2000 Sep;89(9):1122-8.

Krause NM, Jay GM. What do global self-rated health items measure? Med Care. 1994 Sep;32(9):930-42

Kroeger A. Health interview surveys in developing countries: a review of the methods and results. Int J Epidemiol. 1983 Dec;12(4):465-81.

Langsten R, Hill K. The accuracy of mothers' reports of child vaccination: evidence from rural Egypt. Soc Sci Med. 1998 May;46(9):1205-12

Lansdown RG, Goldstein H, Shah PM, Orley JH, Di G, Kaul KK, Kumar V, Laksanavicharn U, Reddy V. Culturally appropriate measures for monitoring child development at family and community level: a WHO collaborative study. Bull World Health Organ. 1996;74(3):283-90.

Largo RH, Graf S, Kundu S, Hunziker U, Molinari L. Predicting developmental outcome at school age from infant tests of normal, at-risk and retarded infants. Dev Med Child Neurol. 1990 Jan;32(1):30-45.

Luiz DM, Foxcroft CD, Stewart R. The construct validity of the Griffiths Scales of Mental Development. Child Care Health Dev. 2001 Jan;27(1):73-83.

Lundberg O, Manderbacka K. Assessing reliability of a measure of self-rated health. Scand J Soc Med. 1996 Sep;24(3):218-24

Manderbacka K, Lahelma E, Martikainen P. Examining the continuity of self-rated health. Int J Epidemiol. 1998 Apr;27(2):208-13

Meisels SJ. Can developmental screening tests identify children who are developmentally at risk? Pediatrics. 1989 Apr;83(4):578-85. Review.

Mock C, Acheampong F, Adjei S, Koepsell T. The effect of recall on estimation of incidence rates for injury in Ghana. Int J Epidemiol. 1999 Aug;28(4):750-5.

Murry CJL, Lopez AD. The global burden of disease. 1996

Palisano RJ. Concurrent and predictive validities of the Bayley Motor Scale and the Peabody Developmental Motor Scales. Phys Ther. 1986 Nov;66(11):1714-9.

Provost B, Crowe TK, McClain C. Concurrent validity of the Bayley Scales of Infant Development II Motor Scale and the Peabody Developmental Motor Scales in two-year-old children. Phys Occup Ther Pediatr. 2000;20(1):5-18

Ramakrishnan R, Venkatarao T, Koya PK, Kamaraj P. Influence of recall period on estimates of diarrhoea morbidity in infants in rural Tamilnadu. Indian J Public Health. 1999 Oct-Dec;43(4):136-9.

Ramakrishnan R, Rao TV, Sundaramoorthy L, Joshua V. Magnitude of recall bias in the estimation of immunization coverage and its determinants. Indian Pediatr. 1999 Sep;36(9):881-5.

Ross DA, Vaughan JP. Health interview surveys in developing countries: a methodological review. Stud Fam Plann. 1986 Mar-Apr;17(2):78-94.

Ross DA, Huttly SR, Dollimore N, Binka FN. Measurement of the frequency and severity of childhood acute respiratory infections through household surveys in northern Ghana. Int J Epidemiol. 1994 Jun;23(3):608-16

Roth S, Wyatt J, Baudin J, Townsend J, Rifkin L, Rushe T, Amiel-Tison C, Stewart AL. Early Hum Dev 2001 Dec;65(2):81-9. Neurodevelopmental status at 1 year predicts neuropsychiatric outcome at 14-15 years of age in very preterm infants.

Sonnander K. Acta Paediatr Suppl 2000 Sep;89(434):17-23. Early identification of children with developmental disabilities.

Valadez JJ, Weld LH. Maternal recall error of child vaccination status in a developing nation. Am J Public Health. 1992 Jan;82(1):120-2

World Health Organisation. The World health Report 2000. Geneva

Section 10: Caregiver mental health :

Studies in the UK and USA have found an association between maternal mental health and both the physical and mental health of children and their developmental stage for age. Few studies of this association have been conducted in developing countries although Cooper et al (1999) have found a similar association in South Africa. Maternal mental health may affect the amount and quality of care a mother provides her child. There is a growing amount of research on adult mental health in developing countries and the most widely recommended instrument for measuring adult mental heath in a cost-effective manner is the self response questionnaire 20 items (SRQ 20) which is recommended by the World Heath Organization. The SRQ20 has been used in approximately 20 developing countries including India, Ethiopia, and Peru (WHO 1994-A Users Guide to the Self-Reporting Questionnaire). The SRQ20 has 20 items, which have yes/no answers. It has proven reliability and validity and acceptable levels of specificity and sensitivity (WHO 1994). It has been translated and back translated into several languages including Amharic, Spanish, Hindi, and Urdu. It has been widely implemented in both urban and rural areas. Refusals are generally very low but interviewers need to be trained to introduce the 20 questions in an appropriate manner and to refer respondents to appropriate services if they answer positively to questions like, "Has the thought of ending your life been in your mind". It should be noted that the SRQ20 is not diagnostic, i.e. it can not separate out anxiety from depression for example.

The following instructions should be given by the interviewer:

> *"The following questions are related to certain pains and problems that may have bothered you in the last thirty days. If you think the question applies to you and you have had the described problem in the last thirty days, answer YES. If you did not have the problem in the last thirty days answer NO. If you are unsure about how to answer a question, please give the best answer you can".*

The general approach of interviewers is to tell subjects that they must really try to answer yes or no, even if it is approximate. If they fail to give either answer, the interviewer should repeat the question once more before moving on to the next item. While this sort of procedure may sound very "impersonal" it is necessary if reliability is to be maintained.

Analysing the SRQ20 involves scoring 1 for a 'yes' and 0 for a 'no' and a decision about a cut off rate for caseness according to the number of yes's given to the 20 questions. The choice of a particular cut off value involves a trade off between sensitivity (probability of the test correctly identifying a case) and specificity (the instrument's ability to identify true non-cases). Increasing sensitivity inevitably causes some decrease in specificity. Conversely, increasing specificity decreases sensitivity. Some investigators prefer to be over inclusive, that is, accept the risk of having more false positives by lowering the cut off score- it is preferable to include false positives rather than to exclude false negatives. Cut off scores have been calculated (through the use of a gold standard) for various developing countries including Ethiopia and India. In India, typically seven yes's and above is regarded as a case. In Ethiopia the cut off score has generally been higher, for example ten/eleven. In countries where it is possible that no cut off score has been calculated for the SRQ20 (for example Vietnam) a small side study to test the SRQ20 against the "gold standard" of in depth psychiatric interview can determine the cut off point. Once the cut off point is identified, each respondent can be classified as case or non case of mental health and further analysis undertaken. For example, do households with low levels of social capital (which includes low levels of social support) have more maternal depression? Is child nutritional status and physical morbidity associated with maternal mental ill heath? Is maternal mental ill heath associated with a negative attitude towards the index child?

The policy implications for maternal mental ill-health are to reduce poverty, increase community development which provides forms of social support and to decrease life events such as the economic shocks which YL is measuring and to decrease long-term difficulties such as living in a harsh, hazardous physical environments.

Reference:

Cooper P., Tomlinson M., Shwartz L. and Woolar L. 1999 Portpartum depression and the mother-infant relationship in a South African peri-urban settlement. British Journal of Psychiatry 175.

Topics exclusive to the 7.5-8.5 year old questionnaire

Section 3: Births and deaths

This collects data on children born and still living as described above for the 6-17.9 month old child.

Section 4 and 7: Child education, work and daily activities

Child education: Education is part of the human capital asset in the livelihoods framework. It is essential in understanding current wellbeing and life chances of the index children. It is intertwined with outcome variables such as life skills and related issues such as child work. Education is more than a yes no quantity and the YLS aim to capture the fluid and dynamic nature of schooling. It thus collects data not only on **current enrolment** and **grade reached** but on **age at enrolment**, **reason for non-attendance** and the **impact of work on schooling**. These comprehensive questions allow issues such as delays in school enrolment, factors that impede the regular progression through school and problems of access to be explored. The YLS acknowledges that education is more than school enrolment and also tests basic numeracy and literacy.

Child work and Daily activities: Child labour is a complex issue and is considered a large social problem in many developing countries because of its magnitude, it's impact on health and on social capital formation. The 1989 Convention on the Rights of the Child states that children should be free from economic exploitation and any work that is hazardous, interferes with schooling, or harmful to their health or development. The International Labour organisation's (ILO) Minimum Age Convention prohibits employment of children under the age of 15 and provides that the minimum employment age should be consistent with the fullest physical and mental development of young persons. However, the convention also recognises a distinction in the various forms of child labour.

Household surveys such as the YLS are a good medium for investigating child labour as the conditions that force children to work, to a large extent, are related to the circumstances in the household. In order to bridge the gap in policy relevant quantitative data the ILO created the Statistical Information and Monitoring programme on Child Labour (SIMPOC) in 1998. It developed a standardised survey methodology, which has been used in 11 countries, with plans for an additional 40 countries. The survey is based on a theoretical framework and has been well tested, because of this, and to allow comparisons to be drawn, the YLS questions are taken from the survey.

Jensen (2001) describes the SIMPOC instrument and states that to create indicators of child labour and to present a portrait of child labour for a particular country (including the patterns, causes and consequences) information must be collected on:

1) Children's economic activity, including activity around the home
2) Schooling
3) Other activities or idleness
4) Information on children living away from home (not relevant as YLS follows the children as they move)
5) Compensation for work
6) Workplace conditions and potential hazards for children
7) Impacts of work on children (including injury and schooling)
8) Parental attitudes, perceptions and aspirations, and
9) Household socio-economic status.

The areas and questions relevant to the YLS household survey are outlined below with the rationale for their inclusion.

Table 2: Overview of Child Labour and Daily Activity Questions and Rationale

Area	Questions	Rationale
Economic Activity	• Engaged in any economic activity in the last 12 months? • # weeks worked per month. Months per year • Housework during past week? # hours housework? • Age start to work for 1st time?	• Core questions related to child economic activity. Valuable because also includes housework. • Type, sector and location of work are important factors when exploring exploitation and in understanding the employment circumstances • Data on quantity and age started important measure of the burden and whether compatible with school
Schooling	• Currently attending school? If no, why not? • Child attends school while engaged in economic activity?	• Child labour and schooling are intimately intertwined and need to know if they are doing both, or neither. • To explore their compatibility need to know whether the child attends is enrolled, and achieves at school.
Other activities	• What does child do for fun?	• Typical to assume that if children are not at school they are working, we need to explore the realities by exploring what children not at school actually do.
Compensation for work	• Give earnings to parents or other relatives? • Why is the child working?	• These questions allow us to determine how depended the household is on child labour

Impacts of work on children	• Work ever caused injury/made ill? • Nature of the injury?	• More direct way of distinguishing more dangerous forms.(see above) • Addresses adverse consequences of child labour in terms of injury
Migration	• Captured because longitudinal study	• Children often change residence related to their employment. Recording migration allows us to trace that phenomenon.
Household Socioeconomic Status	• Captured in section 9	• It is often argued that poverty is the cause of child labour. These questions allow us to explore the relationship between child labour and household socio-economic status.

References:

Development Of Indicators On Child Labour Robert T. Jensen, Ph.D. http://www.ilo.org/public/english/standards/ipec/simpoc/jensen/index.htm. 2001

Section 5: Child health:

As in the 1yr old household questionnaire this section begins with a question on the caregiver's perception of the child's health, which provides a composite measure of general health status. There has been a tendency to view the school age child as essentially healthy because they suffer the lowest mortality of any group. Yet their morbidity has rarely been studied and efforts to quantify age-specific morbidity (World Bank 1993) have used extrapolations from other age groups and are felt to underestimate the problem. As little in known about the impact of morbidity on school aged children the questionnaire repeats the questions about long term health problems but asks specifically about the affect on activities such as school attendance and socialization.

The few studies that have actually measured illness in school age children in developing countries have found stunting, anaemia and parasitic helminth infections prevalent (PCD 1997). Whilst information on **stunting** will be collected in the YLS (by measuring height and weight) measuring helminth infections requires physical examinations, which is not feasible in the YLS, issues around identifying anaemia, sight and hearing difficulties are outlined in the child questionnaire justification document. Other illnesses that were considered for inclusion in the YLS questionnaire include skin diseases, dental carries, asthma and other chronic respiratory infections. Those for which tests/questions are valid and feasible should be used where appropriate.

There is growing evidence that School aged children also suffer from illnesses that affect younger children, such as malaria, more often than is thought and the YLS provides a good opportunity to explore general morbidity. The YLS will try and capture these episodes by asking the caretaker about **morbidity in the last 2 weeks, what the illness was and whether a health service was visited to obtain treatment**. These questions suffer from validity problems which include the fact that:

1. Reports and classification of illness vary depending on the respondent's perceptions of the illness and differences in knowledge.

2. Local illness classification systems are complex. Named illnesses can rarely be converted to the biomedical classification system and some illnesses (particularly chronic ones) may go completely unreported

These limitations must be noted in the analysis but it is anticipated that the data on reported morbidity will increase knowledge about the prevalence of morbidity in school aged children.

References:

The Partnership for Child Development. Better health, nutrition and education for the school-aged child. http://www.child-development.org/Home.htm. 1997

World Bank. World Development Report 1993: Investing in Health . Oxford University Press. New York. 1993.

Section 10: Child mental health:

Mental health is an important indicator of child welfare and an important part of any multi-dimensional child specific poverty measure (see conceptual framework document). The prevalence of child psychiatric disorders in the developed world is 10-20%, but in the developing word the prevalence may be higher. Little is known about the extent to which risk factors identified in the developed world apply in developing countries (Hackett and Hackett 1999). There is no consistent definition of mental health and therefore no gold standard way of measuring it. Most 'mental health' tools screen for the presence of mental disorders.

The **Strengths and Difficulties Questionnaire** (SDQ) is being proposed as the tool of choice for measuring mental health. The SDQ is a complete stand-alone tool, which is simple to use and has good specificity and moderate sensitivity for predicting psychiatric disorder. It compares well with longer and more detailed instruments such as the child behaviour checklist.

Parent or teachers complete the questionnaire and a version exists for 11 to 16 year olds to answer. Although the parent questionnaire can be used on it's own, conducting teacher interviews is also recommended as this reduces the bias resulting from caretakers filtering their responses. The SDQ has been widely used in developing and developed countries and is available in over 40 languages including Urdu, Gujarati, Hindi and Spanish and in both literate and non-literate populations. A literate parent can complete the SDQ in less than 10 minutes but application time is much longer in non-literate populations. The instrument includes questions about behaviour in school, where school attendance is low this is replaced by a question about learning from the pre-school version. Although the SDQ has been used in various developing countries, it should be validated locally for completeness. As it is a copyrighted instrument validation and translation needs to be done in collaboration with the author.

The SDQ is a 25 item instrument that screens for most common mental disorders in children aged 3-16 years. The 5 scales measure emotional symptoms, conduct problems, hyperactivity, peer problems and pro-social actions. It provides a continuous score for every child that can be grouped into normal, borderline and abnormal mental health. Because the tool can be used at several different ages it allows us to monitor mental health over time.

References:

Fleitlich B, Goodman R. Social factors associated with child mental health problems in Brazil: cross sectional survey. BMJ. 2001 Sep 15;323(7313):599-600.

Hackett R, Hackett, L. Child psychiatry across cultures. Int Rev Psychiatry. 1999. 11-225-35.

Appendix: Worked example of calculating the Wealth Index

Data	hh 1	hh 2	
Number of people in h/h	7	6	
No. of rooms	2	3	
Radio	1	1	
Fridge	0	1	
Bike	1	1	
TV	0	1	
Motor bike	0	0	
Motor vehicle	0	0	
Mobile phone	0	1	
Land phone	0	0	
Jewelry/watch	0	1	
CD 1	0	1	
Electricity	0	1	
Brick or plaster	1	1	
Sturdy roof	0	1	
Floor material	0	1	
Drinking water	0	1	
Toilet	0	1	
Cooking fuel	0	1	
Housing quality			Calc for h/h 1
Scaled rooms/person	0.19	0.33	(7/2)/1.5
Brick or plaster	1.00	1.00	
Sturdy roof	0.00	1.00	
Floor material	0.00	1.00	
HQ	0.30	0.83	(0.19+1+0+0)/4
Consumer durables			
Radio	1.00	1.00	
Fridge	0.00	1.00	
Bike	1.00	1.00	
TV	0.00	1.00	

Motor bike	0.00	0.00	
Motor vehicle	0.00	0.00	
Mobile phone	0.00	1.00	
Land phone	0.00	0.00	
Jewelry/watch	0.00	1.00	
CD 1	0.00	1.00	
CD	0.20	0.70	(1+0+1+0+0+0+0+0+0+0)/10
Services			
Electricity	0.00	1.00	
Drinking water	0.00	1.00	
Toilet	0.00	1.00	
Cooking fuel	0.00	1.00	
SV	0.00	1.00	(0+0+0+0)/0
Wealth index	0.17	0.84	(0.3+0.2+0.0)/3

Note: maximum taken to scale sleeping rooms is 1.5 and minimum is 0.