



How to Measure Enabling and Protective Systems for Adolescent Health

Russell Viner

University College London

Innocenti Research Briefs - Methods

Produced by the UNICEF Office of Research, this series of briefs on research methods is intended to share contemporary research practice, methods, designs, and recommendations from renowned researchers and evaluators. The primary audience are professionals, including UNICEF staff, who conduct, commission or interpret research and evaluation findings in development contexts to make decisions about programming, policy and advocacy.

This brief is one of seven on research methodologies designed to expand and improve the conduct and interpretation of research on adolescent health and well-being in low- and middle-income countries (LMICs). Building on the recent [Lancet Commission on Adolescent Health and Wellbeing](#), these briefs provide an overview of the methodological quality of research on adolescents. They cover topics including: indicators and data sources; research ethics; research with disadvantaged, vulnerable and/or marginalized populations; participatory research; measuring enabling and protective systems for adolescent health; and economic strengthening interventions for improving adolescent well-being.

The briefs are written by leading experts in adolescent health and well-being. To read other briefs in this series, visit <https://www.unicef-irc.org/adolescent-research-methods/>

Series editors: John Santelli and Nikola Balvin

INTRODUCTION

Children and adolescents grow to adulthood within a complex web of family, peer, community, societal and cultural influences that affect current and future health and well-being.¹

Concepts of social determinants of health have dramatically shaped our thinking about health and well-being across all ages, since the World Health Organization's Commission on the Social Determinants of Health (CSDH) in 2008.² One of the key actions identified by the CSDH was to 'develop a workforce that is trained in the social determinants of health', as well as to 'measure the problem, evaluate action, [and] expand the knowledge base'.³ Much of the focus of work on social and structural determinants has been on early childhood, given the very strong evidence that nutrition, education, experiences and other aspects of environment in childhood have a strong effect on adult health and well-being.⁴

Yet adolescence is the time in the life course when social determinants are most rapidly changing.

1 Viner, R. M., et al., 'Adolescence and the Social Determinants of Health', *Lancet*, vol. 379, no. 9826, 2012, pp. 1641–1652, <[www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)60149-4/abstract?rss=yes](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60149-4/abstract?rss=yes)>, accessed 1 February 2017.

2 Commission on Social Determinants of Health, 'Closing the Gap in a Generation: Health equity through action on the social determinants of health', World Health Organization, Geneva, 2008, <http://www.who.int/social_determinants/thecommission/finalreport/en/>, accessed 15 January 2017.

3 Ibid.

4 Ibid.

New determinants come to the fore during adolescence, for example peer influence and school connection emerge as a key determinant of health and well-being, while childhood determinants, such as family, diminish in importance and adult factors, such as the workplace, begin to emerge.

Equally importantly, following rapid social and economic development over the past 20 years these determinants have been changing rapidly in family structure, access to education and the labour market in almost all countries. Additionally, other systems such as media and youth culture have become much more influential over that time.

Despite this, there has been surprisingly little published on the social and structural determinants of health and well-being in adolescence. Notable exceptions include the 2012 Lancet Series on

Adolescent Health⁵ and research from the Health Behaviour in School-aged Children (HBSC) collaborative.⁶ Even less has been written of the challenges around measuring social determinants and their effects on adolescents' health and well-being, particularly during the transition to adulthood.

In this brief we will examine research methods and approaches that have been used to measure the social determinants and enabling and protective systems of health and well-being in order to understand key issues for researchers and practitioners seeking to improve the lives of adolescents and young adults. The focus of this piece will be on health, although similar issues apply to other aspects of well-being. (For additional information on the social and structural determinants of adolescent outcomes, see Brief 1 in this series, 'Improving the Methodological Quality of Research in Adolescent Well-being').

Box 1. Key concepts

Social and structural determinants of health	The circumstances in which people live: the economic, political, social, environmental and cultural conditions that affect their health.
Structural determinants of health	Structures of the state that generate social stratification, such as national wealth, income inequality, educational status, gender norms or ethnic group.
Proximal or intermediate determinants	The circumstances of daily life, from the quality of family environment and peer relationships, through availability of food, housing and recreation, to gender issues and access to education. Proximal determinants are generated by the social stratification resulting from structural determinants, but are also generated through cultural, religious and community factors. Proximal determinants define individual differences in exposure and vulnerability to health compromising factors such as tobacco and alcohol use.
Social stratification	Differences between individuals within a social system related to status (socioeconomic status). The differing levels of power, wealth and education between individuals that results is the ultimate driver of inequalities in health.

5 Viner et al., 'Adolescence and the Social Determinants of Health'.

6 Currie, C., *Inequalities in Young People's Health: HBSC international report from the 2005/2006 survey*, World Health Organization Regional Office for Europe, Copenhagen, 2008; Currie, C., et al., 'Social Determinants of Health and Well-Being Amongst Young People', WHO Europe, Copenhagen, 2012; Inchley, J., et al., *Growing Up Unequal: Gender and socioeconomic differences in young people's health and well-being; Health Behaviour in School-aged Children (HBSC) study: International report from the 2013/14 survey*, WHO Europe, Copenhagen, 2016, <www.euro.who.int/__data/assets/pdf_file/0003/303438/HBSC-No7-Growing-up-unequal-full-report.pdf>, accessed 1 February 2017.

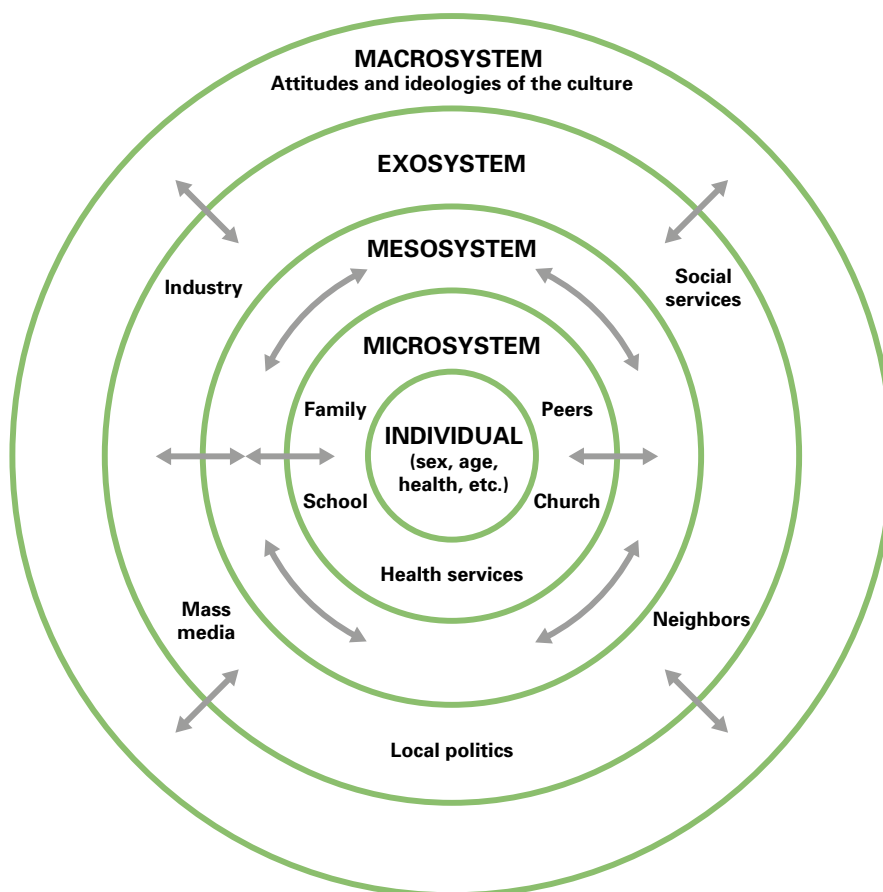
BACKGROUND

A number of models exist to help us understand the operation of social determinants of health. Social ecological models such as the Bronfenbrenner model⁷ situate the individual within social networks, from the more proximal ones such as family, to ever more distal ones, such as neighbourhoods and national societies. The Bronfenbrenner model (see Figure 1), for example, groups social determinants into a micro system immediately around the individual through to a macro system involving national and cultural factors. These models are particularly helpful in guiding which research methods to use when measuring key variables.

The Bronfenbrenner model is understood to be largely applicable across cultures, although some terms need to be translated to low- and middle-income settings (LMICs) (e.g., ‘church’ within the micro system should be read as religious affiliation; ‘family’ usually goes beyond the nuclear family). Such models also do not include the social media space directly, although this is addressed within the peer elements of the model.

At the end of the last century, researchers, policy-makers and programmers began to focus on concepts of resilience and protective factors – those which protect individuals from harm and allow some to weather adversity without impacts on health or well-being.⁸

Figure 1. The Bronfenbrenner social ecological model



Source: ‘Ecological Systems Theory’, https://en.wikipedia.org/wiki/Ecological_systems_theory

7 Bronfenbrenner, U., ‘The Ecology of Human Development: Experiments by nature and design’, Harvard University Press, Cambridge, Mass, 1979.

8 Rutter, M., ‘Resilience: Some conceptual considerations’, *Journal of Adolescent Health*, vol. 14, no. 8, 1993; Blum, L. and Blum, R., ‘Resilience in Adolescence’, in *Adolescent Health: Understanding and preventing risk behaviors*, edited by R. J. DiClemente et al., John Wiley, 2009.

Over the last two decades, theorists have begun to argue that understanding and enhancing health requires a focus ‘upstream’ away from an individual’s risk or protective factors to the social patterns and structures that shape people’s chances to be healthy. Commonly referred to as the social determinants of health, these approaches focus on the pathways by which social and structural conditions translate into health impacts – the ‘causes of the causes’ of disease and ill-health.⁹

The CSDH defined social determinants of health as ‘the conditions in which people are born, grow, live, work and age’, conditions which are shaped by families and communities, and the distribution of money, power and resources at global, national and local levels, and influenced by policy choices at each of these levels.¹⁰ The growing interest in social determinants of health comes from the recognition that structural elements of a society, e.g., wealth and the distribution of wealth, and education and the distribution of education, shape the way that families and communities influence the health chances and choices of individuals.

These determinants can be understood within a social ecological model, e.g., Bronfenbrenner. For adolescents, specifically, these range from material resources (e.g., wealth) and social factors (e.g., gender, ethnicity) through emotional resources (connection to family, school, religion and community) to more cognitive factors (education, high socioeconomic status).¹¹ Key enabling and protective systems for adolescents are the family, peers and the education and legal systems.

Box 2. Summary of key points

- The World Health Organization defines social determinants of health as ‘the conditions in which people are born, grow, live, work and age’.
- Social determinants can be understood as either the fundamental structures of a society (structural determinants) or as more downstream proximal determinants.
- Enabling and protective systems for adolescents are the family, peers and the education and legal systems.
- In addition to research that focuses on individual adolescents, it is also important for researchers to consider measuring social determinants when conducting research on adolescent well-being.
- Health researchers have traditionally treated social determinants such as wealth or educational status as factors of little interest, instead using statistical analyses to adjust away their effects. New analytic approaches recognize that social determinants may be the most important predictors of health and well-being.

RESEARCHING THE SOCIAL DETERMINANTS OF HEALTH

There is a small literature on methodological issues relating to social determinants of health but no publications have specifically dealt with methodological issues in adolescence. Recent studies have concluded that social determinants of health training opportunities exist in many LMICs but that research capacity remains a major issue for strengthening systems to deal with the social determinants of health.¹² However, two networks have been formed to support researchers addressing social determinants of health within LMICs. SDH-Net is a South–North–South collaborative network across Africa, South America and Europe that aims to develop sustainable social determinants of health research capacity within LMICs.¹³

9 Commission on Social Determinants of Health, ‘Towards a Conceptual Framework for Analysis and Action on the Social Determinants of Health: Discussion paper’, WHO Commission on the Social Determinants of Health, 2005.

10 Commission on Social Determinants of Health, ‘Closing the Gap in a Generation’, 2008.

11 Blum and Blum, ‘Resilience in Adolescence’, 2009.

12 Mtenga, S., Masanja, I. M. and Mamdani, M., ‘Strengthening National Capacities for Researching on Social Determinants of Health (SDH) towards Informing and Addressing Health Inequities in Tanzania’, *International Journal of Equity Health*, vol. 15, 2016, p. 23; Hofman, K., et al., ‘Addressing Research Capacity for Health Equity and the Social Determinants of Health in Three African Countries: The INTREC programme’, *Global Health Action*, vol. 6, 2013.

13 Cash-Gibson, L., Guerra, G., Salgado-de-Synder, V. N., ‘SDH-NET: A south–north–south collaboration to build sustainable research capacities on social determinants of health in low- and middle-income countries’, *Health Research Policy Systems*, vol. 13, 2015, p. 45.

The INDEPTH Network (International Network for the Demographic Evaluation of Populations and Their Health in Low- and Middle-Income Countries) has developed the INTREC (INDEPTH Training and Research Centres of Excellence) programme to develop social determinants of health research capacity in 20 LMICs.¹⁴

There are a number of over-arching considerations around the measurement of social determinants of health; these are discussed below.

Frame the research question upstream to consider the causes of the causes

In framing the research question, it is helpful to consider the outcome of greatest interest, the key determinants of interest and the level at which these operate. Most social determinants of health research on health and well-being consider inequity and its consequences. Yet framing the questions correctly is essential. For example, a study of the impact of parent behaviours on adolescent outcomes (such as family use of bednets to prevent malaria) may find them to be important. Yet the causes of parental behaviours that put adolescents at risk also need to be considered, as more 'upstream' factors, such as lack of parent education, and poverty, may contribute. Researchers are encouraged to develop research questions that include examining social gradients in the exposure or risk factor as well as in the outcome.

Plan to collect data at multiple levels

A full assessment of social determinants of health requires collecting data at multiple levels, from data about the individual through to data about the social circles they inhabit, e.g., their family, friends, schools and neighbourhoods. The social ecological model (Figure 1) is a useful starting point to identify relevant domains, the choice of which will be modified according to national and cultural contexts.

Individual-level data are the easiest to collect, both conceptually and practically, as they are largely collected by self-report from individual adolescents. As the scope of interest moves more upstream beyond the individual adolescent, data become more challenging to collect. While some family data can be obtained from adolescents, much can only be obtained from other

family members. The same is true for peers. When looking at schools, the workplace or neighbourhoods, the individual adolescent can only supply a small subset of data – and those may be highly subjective. Data on neighbourhoods can be difficult to obtain as what constitutes a neighbourhood or community varies considerably. Data sources for families, schools, workplaces and neighbourhoods include other informants (parents, teachers, bosses, neighbourhood leaders) or routinely collected administrative data which can be accessed (e.g., from the Ministry of Education). Alternatively, data can be collected on social networks that adolescents belong to.

Assess socioeconomic position and analyse social gradients

A key analytic frame for social determinants of health research is the social gradient – the variation of the outcome across levels of the social determinant in question. There are social gradients from the most to the least advantaged members of society for every aspect of health and well-being, regardless of the specific disease or condition.

The measurement of inequality and social gradients for research is conceptually simple. The most useful measure for researchers is the ratio between the top and bottom ranks for the health and well-being outcome of interest. For example, measures of socioeconomic status are usually grouped in quartiles, quintiles or deciles, with the ratio of the wealthiest group to the poorest group a simple measure of inequality for a health outcome. The ratios of the top or bottom group to the median are considered better measures of inequality, particularly when the distribution of wealth is skewed in a society.

Similar ratios can be calculated for education (e.g., the ratio of an outcome among those attending high school to those not attending high school) to understand inequality in health outcomes by education, and for other social determinants. Showing gradients is important to demonstrate the potential for action on social determinants of health, and also the relative importance of social determinants of health compared with more individual determinants.

¹⁴ Hofman, et al., 'Addressing Research Capacity for Health Equity and the Social Determinants of Health in Three African Countries'.

One consequence of this is that accurate and comprehensive measurement of socioeconomic status or social position is essential within social determinants of health research. Important data to consider include measures of income, employment and type of job, material possessions, parental income, household crowding, access to utilities (e.g., running water, flushing toilets) and more recently access to the internet. Each of these can be reported by individuals. In general, the more socioeconomic status items assessed the better, as each one provides different information. The choice of which measure to use depends on country development and wealth, and whether the measure has sufficient variation to allow gradients to be assessed. For example, access to flushing toilets is unlikely to be relevant if >80% of the population have this.

Some countries provide small area-level socioeconomic status indices that cover multiple socioeconomic status domains, however these are very rare in LMICs.

When using multiple socioeconomic status items (e.g., crowding, possessing various household items, having access to water or electricity) it can be useful to combine them into a single measure. This can be done simply by creating an additive scale, e.g., scoring a point for each item. Alternatively factor analysis techniques can be used to derive an overall measure of socioeconomic status.

The gradient in adolescent smoking varies dramatically in most countries by income group and by gender and ethnicity. Yet in traditional public health, smoking is often attributed to individual determinants, e.g., peer pressure or risk-taking among adolescents. Showing the variation in smoking rates by income group or gender inherently demonstrates that all groups could achieve the same rate as the best group, and is indicative of the potential for action upstream.

Ensure the diversity of the population is represented

A key element of social determinants of health research is that it includes the diversity of the population, in contrast to much research, which perpetuates inequalities by excluding women, children, minorities or marginalized groups. Research that includes marginalized and excluded groups is required to ensure that future interventions work across the population. Community participatory research designs can be very effective in ensuring all sections of the population are included. (See Brief 4 in this series: 'Research with Disadvantaged, Vulnerable and/or Marginalized Adolescents'; and Brief 5, 'Adolescent Participation in Research: Innovation, rationale and next steps'.)

Analyses must consider the clustered nature of collected data

If quantitative data are collected across levels, then a cluster analysis or multilevel analysis must be undertaken. For example, a study of adolescents in schools with a focus on the impact of education on well-being, which collects data about schools as well as data from individuals, will require any analysis to take account of data being collected at two levels (the first level being the individual, the second level being the school; all individuals are clustered within schools). At its simplest level, this need can be met using standard regression models and including a cluster variable.

METHODOLOGICAL ISSUES RELATING TO ADOLESCENCE

Various methodological issues relate to the study of social determinants during adolescence.

Mechanisms for action of social determinants of health in adolescence

Understanding the mechanisms of how social determinants of health influence adolescent well-being is important as this influences the approach to measurement, and affects policy responses or interventions.

There are probably three ways in which social determinants of health affect the health and well-being of adolescents. First, *latent* mechanisms are those through which social determinants of health affect biological

development during a key developmental period, such as puberty. Poverty may impact on health and well-being by accelerating or holding up pubertal development and influencing brain development, reproductive functioning and even late cardiovascular disease risk.

A second suggested mechanism is via determinants which set individuals onto pathways or trajectories that influence well-being over the life course. These pathway effects particularly relate to achieving transitions during adolescence. For example, making the transition from primary to secondary school is a pathway effect, as secondary education gives adolescents better life chances in the long term.

The third mechanism is the simple accumulation of advantage or disadvantage due to exposure to unfavourable environments over time. For example, living in poverty in adolescence adds to the impact of poverty in earlier childhood.

Latent effects may be studied by examining the associations of pubertal timing on health and well-being. Pubertal timing may be assessed through self-report of the Tanner stage of puberty, physical examination or hormonal studies.

Pathway effects can be assessed by comparing adolescents who have or have not made a particular transition, e.g. by comparing the well-being of those who have transitioned to secondary school with that of same-age adolescents still in primary school.

Assessing cumulative effects can be done relatively simply, e.g. by assessing how many years a young person has lived in poverty.

Measuring income and deprivation in adolescence

A common research challenge is that adolescents – particularly younger adolescents – are often unable to report accurately important socioeconomic status data, such as parental income or parent education. These data may be obtained from parents. However, if parents are not involved in the research, an accepted alternative approach is to ask adolescents to report on an asset-based system, e.g. whether the household has material possessions, access to water, electricity or toilets, and about household crowding and parental employment. Commonly then a statistical approach is used (principal component analysis) to generate a

wealth index as a proxy for socioeconomic status. This approach is used in many individual surveys, and in the household surveys in LMICs, e.g. Demographic and Health Surveys (DHS). The Wealth Index of the DHS is a composite measure of a household's cumulative living standard and is calculated using easy-to-collect data on a household's ownership of selected assets, such as televisions and bicycles, materials used for housing construction, and types of water access and sanitation facilities. It is likely that adolescents report some indices well. An alternative is to use an approach developed specifically for adolescents, the Family Affluence Scale developed by the Health Behaviour in School-aged Children (HBSC) study.¹⁵ The Family Affluence Scale asks about a range of material possessions, such as whether adolescents have to share bedrooms and about access to computers or the internet.¹⁶ The Family Affluence Scale can then be grouped into tertiles to assess social gradients. However, this has only been validated in middle- and high-income countries.

Measuring adolescent transitions

A World Bank World Development Report identified five key transitions young people must make: from primary to secondary to higher education, from education into the workforce, from dependency to responsibility for own health, from family to autonomy and parenthood, and the transition to responsible citizenship.¹⁷

There are no universally accepted measures for the study of these transitions. While some are conceptually simple to measure (e.g., transitions from primary to secondary education, and from education into the workforce), the others – transitions to autonomy and parenthood, to responsibility for own health, and to responsible citizenship – have no accepted ways of measurement. One pragmatic approach is to reuse measures from well-conducted previous studies, although both the reliability and validity of measures must be assessed in new populations under study.

15 Currie, *Inequalities in Young People's Health*, 2008.

16 Currie, C., et al., 'Researching Health Inequalities in Adolescents: The development of the Health Behaviour in School-Aged Children (HBSC) family affluence scale', *Social Science Medicine*, vol. 66, no. 6, 2008, pp. 1429–1436.

17 World Bank, *World Development Report: Development and the next generation*, World Bank, Washington, D.C., 2007.

Difficult to reach populations

Many of the adolescents whose well-being and health are most vulnerable are highly socially marginalized. Such young people include those who are among the most deprived groups within communities, such as low 'castes', indigenous and minority ethnic groups, homeless adolescents, migrants, those trafficked, those stigmatized for various reasons, and those marginalized because of their sexuality. Socially marginalized adolescents are difficult to access and engage in research for many reasons, including greater difficulty identifying them and in undertaking ethics processes. Adolescents from these groups can be considered doubly marginalized because of their social status and age. For details see Brief 4 in this series: '[Research with Disadvantaged, Vulnerable and/or Marginalized Adolescents](#)'.

Of course, marginalization is usually a direct result of the social determinants of health, wealth, ethnicity, education or disability. Not to include such groups in research is to miss the full extent of the influence of social determinants.

Gender and sexuality

It is in adolescence that young people's encounters related to gender inequity intensify. Adolescent girls can be among the most powerless group in society, having left the relative protection of childhood but without yet having acquired the knowledge or maternal roles that can provide older women with elements of power within societies.

It is therefore particularly important for gender to be a standard lens in any social determinants of health research. Given gender is (traditionally) dichotomous, one cannot show gender gradients in outcomes except for male–female differences. However, it can be very powerful to show socioeconomic status gradients in health and well-being separately by gender. In highly gender unequal societies, outcomes for high status women may be comparable to those of low status men.

Similarly with sexuality, it is largely only in adolescence that lesbian, gay or transgender adolescents begin to experience inequality. Similar approaches to showing gradients by sexuality, or by sexuality and socioeconomic status, can powerfully

demonstrate the impact of social determinants of health in adolescents' lives.

Child marriage and child-rearing

Marriage is a key transition point for adolescents and young adults from being a dependent part of their birth family to being a part of a family of their own, although these distinctions may not be clear-cut in [socio-centric cultures](#).

In high-income countries and many middle-income countries in some regions, age at marriage and age at first child are on average in the mid to late 20s. Yet in many LMICs very substantial proportions of people, particularly girls, make this transition in adolescence, and even early adolescence. Young age at marriage now has a great focus within policy and programming for adolescents, because of its association with risk for health and well-being.

It is essential to collect data on marital status and age at marriage for all social determinants of health research with adolescents. Marriage represents a key transitional social determinant of health in its own right. However, marriage may also involve transition from young women's birth family social status to the status of their husband or family, and may signal the end of their education.

Adolescents are clustered within families, schools and communities

The importance of considering levels of data relating to social determinants of health was noted above. It is nearly impossible to study adolescents without considering the contexts of families, schools, peers and neighbourhoods. Like younger children, adolescents are necessarily clustered within families. But unlike children, they begin to experience new social worlds, which are essential to consider within social determinants of health research – peer groups, schools and neighbourhoods.

ENABLING AND PROTECTIVE SYSTEMS

The experiences of adolescents growing up today and the social determinants that influence their health and well-being differ in fundamental ways from those of past generations.¹⁸ Key among these changes globally has been the structure and function of families, exposure to education and education systems, and exposure to media influences including social media. Each of these function as a protective, enabling or supportive system that exposes adolescents to factors that can promote or impair their health and well-being. Here we examine the changing impacts of these key systems on adolescents' well-being and how to capture their influence using research methods.

Measuring family factors

Families are the core human structures within which children are born, grow and develop and from which adolescents transition to adult lives, variably linked with their birth family and their future family.¹⁹ Families are the primary protective mechanism for adolescents during their development and their initial major source of social and financial capital. Families are therefore a key mechanism by which adolescents are exposed to socioeconomic gradients in health. Poverty is linked to family structure, with single parent households being more likely to be poor, particularly female-led single households.

Families also provide an important role in collective socialization of adolescents, protecting them through monitoring and supervision,²⁰ and experiences of family function and relationships during this period of identity formation are crucial to their future well-being, family relationships and child-rearing.

The greatest evidence on how families affect adolescent well-being is on parent–adolescent communication, with limited but consistent evidence that parent–adolescent communication about sex delays initiation of sex and promotes contraception use. Better parent–adolescent communication also improves adolescent self-esteem, self-worth

and social functioning, and reduces mental health problems.²¹

The measurement of family structure is relatively straightforward, focusing on which adults and other children and adolescents live in the family household. Of course, definitions of families must be appropriate to the culture under study. Within Western and Western-influenced cultures, families are generally understood to be limited to the more nuclear family of children and parents, however constituted, and potentially including grand-parents. Within more socio-centric cultures, definitions of families are much broader.

Measurement of family relationships and functioning is less straightforward. There are a number of detailed psychometric measures of family functioning; a recent systematic review found 107 measures across domains including parent–child relationships, discipline, parental beliefs, parent–parent relationships and global family function.²² Many of these instruments use observation or semi-structured interviews, which are less likely to be feasible in LMICs. Self-report scales and questions are attractive for research with adolescents although they have some limitations (e.g. reporting bias).

However, many adolescent surveys use simple questions to cover the key areas of family communication, relationships and parental monitoring behaviours. The World Health Organization Global School Health Survey (GSHS) conducted in LMICs takes this approach.²³ In surveys conducted confidentially in class rooms, adolescents are asked:

- 'During the past 30 days, how often did your parents or guardians understand your problems and worries?'
- 'During the past 30 days, how often did your parents or guardians *really* know what you were doing with your free time?'
- 'During the past 30 days, how often did your parents or guardians go through your things without your approval?'

18 Institute of Medicine and National Research Council of the National Academies, *Toward an Integrated Science of Research on Families: Workshop report*, National Academies Press, Washington, D.C., 2011.

19 Child Trends, *World Family Map 2014: Mapping family and child well-being outcomes*, 2014.

20 Institute of Medicine and National Research Council of the National Academies, *Toward an Integrated Science of Research on Families*, 2011.

21 Patton et al., 'Our Future', <[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)00579-1/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)00579-1/fulltext)>, accessed 16 January 2017.

22 Pritchett, R., et al., 'Quick, Simple Measures of Family Relationships for Use in Clinical Practice and Research: A systematic review', *Family Practice*, vol. 28, no. 2, 2011, pp. 172–187.

23 Global School-Based Student Health Survey (GSHS), <www.who.int/chp/gshs/en/>.

Using adolescent self-report necessarily only provides the young person's perception. Better research with families includes multiple respondents including adolescents, parents and potentially other family members. Qualitative research with inter-generational focus groups may also be useful to understand elements of family function.

Measuring education factors

There has been a dramatic global expansion in the education of adolescents in the past 30 years across countries from every region and across all country income levels.

Education is one of the strongest social determinants of health across the life course. In both rich and poor countries, the more educated live longer lives, with less disability and ill-health, which is likely to be causal.²⁴ In high-income countries, the benefits of education are generally greater for women than men, particularly in levels of mortality, self-reported health, mental health and obesity.²⁵ Among adolescents, education has been shown to be associated with reduced teenage births and age at marriage in a number of LMICs.²⁶ Education also has striking inter-generational effects on health; estimates suggest that improved education for women may account for up to half the global improvement in child mortality since 1970.²⁷

This expansion of secondary education is likely to provide major opportunities for countries in relation to health and well-being. Education and health are likely to influence each other through multiple mechanisms. First, common factors such as family resources or personal assets (e.g. IQ, self-regulation or resiliency factors) may promote both education and health. Second, those with poor health in childhood are likely to obtain less education. Greater education may influence health through effects on income and environmental exposures and through healthier

behaviours and effects on peer exposures.²⁸ The contribution of different mechanisms is unclear, although there is evidence that the effects of education on health persist after all health behaviours are accounted for.²⁹

Adolescents are only able to report on certain aspects of education, such as level of educational attainment, duration of education and subjective responses to school. Other relevant information about schools, including measures of school quality and school demographics (type and size of school, school deprivation etc.), must be obtained from other sources.

Access to education

Measurement of access to or participation in education in research are relatively straightforward. Most surveys in LMICs (e.g. Young Lives cohort studies, the Cebu Longitudinal Health and Nutrition Survey in the Philippines, the Kagera Health and Development Survey from rural Tanzania and various other cohorts) use a range of self-report questions to assess participation in education. These include asking participants to report whether they are still in school, and if so their current school year, or if not what was the highest year of schooling they completed. Participants may also be asked the age that they started primary school and whether they missed school for prolonged periods. Clearly the way questions are phrased needs to relate to the school system in the country in question. These questions provide a reasonable estimate of educational access for the majority. Part-time or intermittent schooling can be difficult to interpret in self-report surveys. The presence of alternative educational systems (e.g., religious systems) in some countries provides further complexity, especially when students have attended schools in both systems. (For additional information on measuring education and learning, see Brief 2 in this series: 'Data and Indicators to Measure Adolescent Health, Social Development and Well-being.')

24 Cutler, D. M. and Lleras-Muney, A., 'Education and Health: Insights from international comparisons', National Bureau of Economic Research, Cambridge, Mass, 2012.

25 Miyamoto, K. and Chevalier, A., 'Education and Health', in *Improving Health and Social Cohesion through Education*, OECD Publishing, 2010.

26 McQueston, K., Silverman, R. and Glassman, A., 'The Efficacy of Interventions to Reduce Adolescent Childbearing in Low- and Middle-Income Countries: A systematic review', *Studies in Family Planning*, vol. 44, no. 4, 2013, pp. 369-388.

27 Gakidou, E., et al., 'Increased Educational Attainment and its Effect on Child Mortality in 175 Countries Between 1970 and 2009: A systematic analysis', *Lancet*, vol. 376, no. 9745, 2010, pp. 959-974.

28 Cutler and Lleras-Muney, 'Education and Health'; Miyamoto and Chevalier, 'Education and Health', 2012.

29 Cutler, D. M. and Lleras-Muney, A., 'Understanding Differences in Health Behaviors by Education', *Journal of Health Economics*, vol. 29, no. 1, 2010, pp. 1-28.

Educational aspirations

Further important factors related to access to education are educational aspirations and parental educational attainment. The level of education attained by parents, guardians or carers is an important determinant of adolescents' access to education and later attainment. A related factor is the level of education that parents aspire to for their children. Each of these questions can be asked within accompanying parent surveys. While it is possible to ask adolescents about their parents' educational attainment, the resulting data are highly likely to be inaccurate and incomplete.

Measuring adolescents' educational aspirations is also important as these aspirations strongly predict later educational persistence and success. Surveys usually assess adolescents' educational aspirations by asking participants whether they aim to finish primary or secondary education, and to what level, and whether they wish to continue to further or tertiary education. Qualitative data on aspirations gained through focus groups may also be useful.

Connection to school

Measurement of connection to school involves assessing elements of an adolescent's connection to school; another important determinant is represented by parental involvement. There are multiple complex measures of school environment and adolescent or parental perceptions of schools, but simple measures also suffice. The GSHS measures adolescents' connection with school and their assessment of the school environment through simply asking 'During the past 30 days, how often were most of the students in your school kind and helpful?' The GSHS measures parental connection with school through questions about whether parents routinely check young people's homework: 'During the past 30 days, how often did your parents or guardians check to see if your homework was done?'

School-level factors

Assessing school-level factors is a further element of assessing the effects of education on health and well-being. Factors known to be important for some health outcomes include school size, school type (e.g., private or state-funded), whether single or mixed-sex, and the proportion of poor students within a school. These data are useful to collect for research

involving adolescents in schools, although availability depends on the school system. Many school systems also assess school quality across multiple domains, with increasing evidence that the quality of school a young person attends is important for their well-being. Measurement of school quality is the subject of intensive international research and is outside the remit of this brief.

Note that if data on schools are used, multilevel or clustered approaches to analyses are required, as discussed earlier.

Measuring peer factors

The emergence of strong peer relationships is one of the key developmental changes of early adolescence and peer processes have long been regarded as an important determinant of health and well-being for adolescents.³⁰

There is a dramatic increase in the amount of time spent with peers during adolescence, and an increasing divergence between peer and family values, both of which increase the exposure of adolescents to peer influence. Peers may play a protective role but also increase risk for poor health and well-being.

While measurement of peer effects is a complex research area, simple methods are most commonly used. In behavioural research, asking adolescents how many friends participate in the same behaviour (e.g. asking the number of friends who smoke when researching substance use) is a simple way to assess peer effects. Further detail on peer effects can be gained by asking about the contexts of the behaviour, e.g. for substance use asking whether substances are used when alone, only with friends or with family members. These questions only illuminate likely peer effects. Further information on their strength can be gained by asking adolescents about their attitudes to peer behaviours (e.g., peer smoking) and whether the views or behaviours of peers influenced their own behaviour or view.

Some of the above questions provide information about connection to peers. The measurement of

30 Furstenberg, F. F., 'The Sociology of Adolescence and Youth in the 1990s: A critical commentary', *Journal of Marriage and the Family*, vol. 62, 2000, pp. 896-910; Jaccard, J., Blanton, H. and Dodge, T., 'Peer Influences on Risk Behavior: An analysis of the effects of a close friend', *Developmental Psychology*, vol. 41, no. 1, 2005, pp. 135-147.

peer social networks is also a complex area. Simple measures may provide an estimate of the strength of peer connection. For example, the GSHS simply asks adolescents the number of close friends they have. More complex measures are beyond the remit of this brief.

Social media and youth culture

Social networking and new media and telecommunications provide new opportunities for peers to influence well-being.³¹ The online world has also changed key developmental tasks in adolescence, e.g., the way adolescents build their identity and learn about relationships. For many adolescents today, identity building incorporates elements derived from global youth cultures as well as traditionally more local elements.³²

In peer research it is important to include questions about social media use, including peer relationships through social media. For example, estimates of the number of friends an adolescent has need to distinguish between online and offline friends, and measures of bullying need to include cyberbullying as well as traditional forms. The type of questions does not differ from those used to assess traditional peer influences.

ETHICAL ISSUES

There are several ethical issues related to conducting research on the social determinants of health and well-being in adolescence, some of which are covered in this series, see Brief 3, '[Inclusion with Protection: Obtaining informed consent when conducting research with adolescents](#)'; and Brief 5, '[Adolescent Participation in Research: Innovation, rationale and next steps](#)'.

Power

First, research on social determinants of health necessarily involves issues relating to power, position and inequality that can be threatening to adolescents but also to other actors involved including families, peers and schools. These may have unwanted

repercussions that need to be considered.

Adolescents may not feel able to participate or may actively be discouraged from participating in research, particularly if it involves reporting on family factors or aspects of sexual and reproductive health. Older family members, often males, may feel they can speak for adolescents, or believe that adolescents should not report their opinions.

Being sensitive to these issues is important. Extensive community engagement may alleviate some concerns. Seeking alternative ways to involve adolescents in research may also be important.

Participatory research

Research on adolescent well-being and its relationships to power, socioeconomic position and social institutions such as family, education and peers should involve adolescents in the design of research. It is important to be aware that [participatory research designs](#) may also disrupt household power dynamics, and inadvertently put adolescents at risk.

Make allowance for identifying harm in research

The focus of social determinants of health research with children and adolescents is on identifying inequity linked with wealth, education and factors such as gender and ethnicity, but also identifying the protective effects of families and schools.

Research should have equipoise about the direction of outcomes. Research may find that purportedly enabling and protective systems may also act to produce harm. This can occur when the proximal elements of the system are dysfunctional (e.g., poor schools, dysfunctional families) and when adolescents are excluded from benefits of the system because of their socioeconomic position, cultural beliefs or behaviours. It is necessary to be open to findings that may not fit with a standard social determinants of health world view.

31 Strasburger, V. C., Jordan, A. B. and Donnerstein, E., 'Health Effects of Media on Children and Adolescents', *Pediatrics*, vol. 125, no. 4, 2010, pp. 756–767

32 National Research Council and Institute of Medicine, *Growing Up Global: The changing transitions to adulthood in developing countries*, The National Academies Press, Washington, D.C., 2005.

IMPLICATIONS FOR RESEARCH ON THE SOCIAL DETERMINANTS OF HEALTH AND WELL-BEING IN ADOLESCENCE

Adolescence is a period within the life course when new social determinants arise and when health and well-being is dominated by largely preventable morbidity and mortality. The neglect of adolescence within social determinants of health research that otherwise targets young children and/or adults is therefore puzzling and ultimately unethical.

Consideration of social determinants of health is essential in any research on well-being or health with adolescents, whether at local, community or national levels. There are various key methodological issues to consider in undertaking any research on social determinants of health, including with adolescents. These include the importance of framing research questions to consider inequity, collecting data at multiple levels and taking account of the clustered nature of resulting data in any analyses, assessing socioeconomic position and social gradients in exposures and outcomes, ensuring the diversity of the population is included, and using community participatory research designs where possible.

Social determinants of health research with adolescents must consider potential mechanisms for social determinants of health actions that are unique to adolescence (latent, pathway or cumulative pathways); consider the importance of puberty and adolescent brain development in moderating the action of social determinants of health; use alternative methods to assess socioeconomic status due to reporting challenges for adolescents; include difficult to reach populations of adolescents; include data from parents, peers and schools where possible; and recognize the clustering of adolescents within families, schools and communities. The effects of gender, sexuality and marriage are critical within any social determinants of health analyses. Involving adolescents in planning and undertaking research is an approach that is likely to improve the reach and quality of findings. Measuring protective systems including family, peer and school factors is essential for understanding adolescent health and well-being.

The development of research capacity for understanding the impacts of social determinants of health in adolescents' lives is a priority, especially in LMICs, where there are also several important areas for future research. For example, strikingly little is known about social gradients in health and well-being among adolescents outside high-income countries. A focus on research methods to assess social determinants in adolescents is also required, particularly in LMICs. While complex measures are available to evaluate family function or school quality, these are almost entirely relevant to high-income countries and too complex to be widely used, even in these settings. While research surveys used by policy-makers in LMICs, such as the GSHS, uniformly use much simpler measures as outlined above, the validity and utility of these questions requires further evaluation.

GLOSSARY

<u>Additive scale</u>	A measurement scale with categories that can be added in a meaningful way. Examples include scales that measure weight, length, area and time.
<u>Adolescents</u>	The World Health Organization and UNICEF have traditionally defined adolescents as being young people aged between 10 and 19 years. However, adolescents are increasingly being grouped collectively with young adults, with ‘adolescents and young adults’ being the age band of 10 to 24 years, as this age band more reliably captures the physical, social and neurocognitive developments that define adolescence.
<u>Children</u>	Persons aged below 18 years, as defined by the Convention on the Rights of the Child, unless the laws of a particular country set the legal age for adulthood younger.
<u>Cluster analysis</u>	A statistical technique for grouping (clustering) data that are similar to each other in a meaningful and/or useful way.
<u>Composite measure</u>	A measure that combines two or more individual measures in a single score. Examples include the Body Mass Index, which combines the indicators of height, weight and age, or an IQ test, which combines the scores from several standardized tests of intelligence.
<u>Decile</u>	A way to divide a range of ordered data points into ten equal parts. One decile represents one-tenth of the sample or population. For example, families and family income can be divided into ten equal groups from low-income to high-income.
<u>Factor analysis</u>	A statistical method for reducing a larger number of variables to a smaller number of variables called factors. For example, factor analysis can convert a series of questions about peer influence into a scale of peer influence.
<u>Focus group</u>	A qualitative research technique in which a group of participants of common demographics, attitudes or behaviour patterns is led through a group discussion on a particular topic by a trained facilitator. Focus groups can be used to clarify terminology, identify cultural understanding about an issue, and suggest mechanisms or processes that influence health and well-being.
<u>Multilevel analysis</u>	An analytical approach that uses hierarchically organized data at two or more levels (e.g. individual, household, community, country) to understand the relationship of factors at multiple levels (such as family and individual factors) to an outcome (such as adolescent mental health). Also known as multilevel modelling, hierarchical linear models, nested data models, mixed models etc.
<u>Pathway effects</u>	Mechanisms by which social determinants influence the trajectories young people take through life.
<u>Participatory research design</u>	A research design which promotes the active participation of those being studied (e.g. adolescents) in various aspects of the research process, including setting research objectives, selecting the data collection methods, implementing data collection and interpreting data, and reviewing the work of technical experts. Participatory research seeks to balance the research interests and benefits between the research participants and researchers.
<u>Principal component analysis</u>	A statistical procedure which transforms a number of possibly correlated variables into a smaller number of uncorrelated variables called principal components. Similar to factor analysis, it is often used to construct scales.

<u>Qualitative research</u>	Research methods that gather descriptive data – including text, images, sound etc. – that are not numerical or quantitative. Common methods include interviews, focus groups, observation and ethnography. Results are not usually considered generalizable, but are often transferable.
<u>Quartile</u>	A way to divide a range of data into four equal parts, with each containing one-quarter of the range. For example, dividing a population into four equal groups by age.
<u>Quintile</u>	A way to divide a range of data into five equal parts, with each containing one-fifth of the range.
<u>Reliability</u>	The extent to which a research instrument or procedure produces consistent results. A reliable instrument or procedure should produce the same or compatible results each time it is repeated with the same group. See: validity.
<u>Reporting bias</u>	Selective revealing or suppression of information by research participants. Also known as self-report bias. For example, the tendency to over-report one's height and under-report one's weight.
<u>Resilience</u>	Factors which protect individuals from harm and allow some to weather adversity without impacts on health and/or well-being.
<u>Self-report instrument</u>	A survey, questionnaire or any other instrument which relies on the participant to report their own behaviours, attitudes, beliefs, emotions, knowledge etc. Data are subject to a self-report bias.
<u>Social gradient</u>	Variation in the well-being/health outcome across levels of a social determinant.
<u>Social ecological models</u>	Theoretical models that take into account the interactive effects of personal and environmental factors that determine human behaviour. A socio-ecological model usually includes five levels of analysis: individual, interpersonal, community, organizational and policy or enabling environment.
<u>Socio-centric culture</u>	A culture or society in which an individual gets her or his identity and status from the group, traditionally the extended family.
<u>Tanner stages</u>	The stages of physical development or puberty as a person transitions from child to adult body form; standardized by and named after James Tanner. The stages are based on observable primary and secondary characteristics, including size and shape of breasts, external genitalia for adolescent males, and pubic and auxiliary hair.
<u>Validity</u>	The degree to which a measure accurately assesses the specific concept that the researcher is attempting to measure. A measure can be reliable, consistently measuring the same thing, but not valid. See: reliability.

READINGS FOR FURTHER EXPLORATION

Commission on Social Determinants of Health, *Closing the Gap in a Generation: Health equity through action on the social determinants of health*, World Health Organization, 2008, <www.who.int/social_determinants/thecommission/finalreport/en/>, accessed 1 February 2017.

DHS Program, *DHS [Demographic and Health Surveys] Wealth Index*, US Agency for International Development, <www.dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm>, accessed 1 February 2017.

Inchley, J., et al., *Growing Up Unequal: Gender and socioeconomic differences in young people's health and well-being; Health Behaviour in School-aged Children (HBSC) study: International report from the 2013/14 survey*, WHO Europe, Copenhagen, 2016, <http://www.euro.who.int/_data/assets/pdf_file/0014/303440/HSBC-No.7-Growing-up-unequal-PART-1.pdf?ua=1>, accessed 1 February 2017.

UNICEF, 'Module 1: Understanding the Social Ecological Model (SEM) and Communication for Development (C4D)', no date, <https://www.unicef.org/cbsc/files/Module_1_-_MNCHN_C4D_Guide.docx>, accessed 1 February 2017.

Viner, R. M., et al., 'Adolescence and the Social Determinants of Health', *Lancet*, vol. 379, no. 9826, 2012, pp. 1641–1652, <[www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)60149-4/abstract?rss=yes](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60149-4/abstract?rss=yes)>, accessed 1 February 2017.

ACKNOWLEDGEMENTS

This series benefited from the guidance of many individuals. The authors and the Office of Research – Innocenti wish to thank everyone who contributed and in particular the following senior advisers and reviewers:

Senior advisers: Monika Arora, George Patton, David Ross, Susan Sawyer, Russell Viner.

Reviewers: Rima Afifi, Wendy Baldwin, Prerna Banati, Gabrielle Berman, Emanuela Bianchera, Devashish Dutta, Gaspar Fajth, Samantha Garbers-Adams, Goran Holmqvist, Robert Klitzman, Paul Nary, Mary Ott, Amber Peterman, Suzanne Petroni, Dominic Richardson, Ilene Speizer, Fred Ssewamala.

Extracts from this publication may be freely reproduced with due acknowledgement. Requests to use larger portions or the full publication should be addressed to the Communication Unit at florence@unicef.org.

The text has not been edited to official publication standards and UNICEF accepts no responsibility for errors. We suggest the following form of citation for readers who wish to cite this document:

Viner, R. (2017). 'How to Measure Enabling and Protective Systems for Adolescent Well-being and Health', Innocenti Research Briefs 2017-08: Conducting Research with Adolescents in Low- and Middle-Income Countries no. 6, UNICEF Office of Research – Innocenti, Florence, 2017.

This brief has undergone an external and internal peer review.

The Office of Research – Innocenti is UNICEF's dedicated research centre. It undertakes research on emerging and current issues in order to inform the strategic directions, policies and programmes of UNICEF and its partners, shape global debates on child rights and development, and inform the global research and policy agenda for all children, and particularly the most vulnerable.

Columbia University is a global centre for scholarship and education. The Mailman School of Public Health is at the forefront of public health research, education and community collaboration around the world. The School addresses diverse public health issues to advance health and well-being globally, by translating research into action.

© UNICEF Office of Research

