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Child Development in Developing Countries: Introduction and Methods

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Abstract

The Multiple Indicator Cluster Survey (MICS) is a nationally representative, internationally comparable household survey implemented to examine protective and risk factors of child development in developing countries around the world. This Introduction describes the conceptual framework, nature of the MICS3, and general analytic plan of articles in this Special Section. The articles that follow describe the situations of children with successive foci on nutrition, parenting, discipline and violence, and the home environment addressing two common questions: How do developing and underresearched countries in the world vary with respect to these central indicators of children's development? and How do key indicators of national development relate to child development in each of these substantive areas? The Special Section concludes with policy implications from the international findings.

Early childhood is a critical period in development as rapid gains in physical, cognitive, and socioemotional domains constitute “building blocks” of children's later growth. The multiple domains of child development are also interlocked (Elder & Shanahan, 2006; Lerner, Lewin-Bizan, & Warren, 2011). For example, good nutrition during the early years is important for healthy physical development and enhances cognitive and socioemotional growth (Leavitt, Tonniges, & Rogers, 2003). Responsiveness in the parent-child relationship promotes wholesome socioemotional development and leads to improved physical and cognitive outcomes (Zaff et al., 2003). In the words of Magnusson and Stattin (1998, p. 727), “individuals, not variables, develop.” In addition, the medium of development plays a central role in the course and outcome of ontogeny. The holistic approach captures this vital perspective:

The individual is an active, purposeful part of an integrated, complex, and dynamic person-environment (PE) system.... Consequently, it is not possible to understand how social systems function without knowledge of individual functioning, just as individual functioning and development cannot be understood without knowledge of the environment (Magnusson & Stattin, 2006, p. 401).

Despite consensus about the significance of early childhood and what it portends about development in the balance of the life span, as well as the consequence of both caregiving and the environments of early development, there is a surprising dearth of population-based multinational data on the diverse experiences and conditions that promote or thwart child well-being. This deficit is especially notable among developing countries. Most of what is currently known about child development comes from studies of children in the minority developed world (Bornstein, 2009), and much of what is known about child development in the majority world of developing countries comes from studies of small samples in single

locales (for reviews, see Engle et al., 2007; Walker et al., 2007). Population-based multinational data from the developing world are also indispensable to identify in which countries, regions, and communities children are at most risk as well as which domains of development are broadly susceptible to which experiences. The result would leverage better-informed national and global policies for early child development. Furthermore, taking aggregates into account would improve our understanding of developmental trajectories for individuals and populations and help to ensure equality of opportunity to all children. Thus, population-based multinational data are crucial for monitoring the situations of child development worldwide and to flesh out the data base in human development. The main aim of this Special Section is to examine proximal contexts and influences on multiple domains of development and well-being of young children in a wide range of developing countries. It does so from a holistic perspective.

To achieve this aim, we drew on the Multiple Indicator Cluster Survey (MICS), a nationally representative and internationally comparable household survey (UNICEF, 2006). The MICS is implemented periodically in a large number of developing countries and provides a unique source of information to examine protective and risk factors for child health, nutrition, education, development, and well-being in different regions of the world. Articles in this Special Section make use of data from the third instantiation of the MICS ("MICS3"). This Introduction describes the conceptual framework, the nature of the MICS3 survey, and the general analytic plan of articles in the Special Section. The articles that follow then describe situations of child development with successive foci on child nutrition (Arabi, Frongillo, Avula, & Mangasaryan, 2012), parenting (Bornstein & Putnick, 2012), discipline and violence (Lansford & Deater-Deckard, 2012), and the home environment (Bradley & Putnick, 2012). These MICS3 reports employ a dataset of approximately 1.4 million respondents in 300 thousand families in 28 developing countries. The common questions addressed across these articles are *How do developing and underresearched countries in the world vary with respect to central indicators of nutrition, parenting, discipline and violence, and the child's environment?* and *How do key indicators of national development (life expectancy, education, and gross domestic product) relate to each of these substantive areas of child development?* Family patterns can and do vary considerably both within and across samples; our studies focus on variation across, not within, countries. The Special Section concludes by exploring multiple policy implications from these international findings.

Conceptual Framework

In attempting to shed light on child development in this variety of underresearched and developing nations, we adopt the Human Rights based approach, in particular Child Rights. The Convention on the Rights of the Child (CRC; Limber & Flekkoy, 1995) is the most comprehensive and legally binding articulation upholding children's rights to survival, development, protection, and participation (United Nations General Assembly, 1989). The CRC supposes an ecological perspective in stipulating rights, with a prominent role given to contexts of development. Children have inherent rights to *life, survival, and development* (Article 6). Furthermore, General Comment No. 7 "Implementing Child Rights in Early Childhood" (United Nations Committee on the Rights of the Child, UNICEF, and Bernard van Leer Foundation, 2006) is intended to provide more detailed information and guidance regarding the implementation of child rights; it states "Ensuring survival and physical health are priorities, but States parties are reminded that article 6 encompasses all aspects of development, and that a young child's health and psychosocial well-being are in many respects interdependent" (p. 38). Both health and psychosocial well-being of the child are prerequisites to realizing human potential (Engle et al., 2007). In other words, all children have rights to high-standard health care and nutrition, to nurturing and stimulating interaction, to be protected from abuse and neglect (including both physical and

psychological violence), and to an environment that supports their thriving. Rooted in the Rights framework and adopting a holistic approach to early child development, articles in this Special Section address central issues of child development and the child's ecological context, including the survival of the young child (nutrition), the development of the young child (socializing interactions and environment), and the protection of the young child (prevention of abuse and neglect).

The first article focuses on nutrition. From an evolutionary stance, survival and reproduction are the ultimate criteria of adaptation. After reproduction, survival is ensured through provision of nourishment and protection of the child, particularly critical during the window of conception to 2 years after birth when offspring are most vulnerable. As Arabi and colleagues (2012) assert, parents must meet the biological, physical, and health requirements of their children. Child mortality is a perennial parenting concern, and caregivers are responsible for promoting children's wellness, preventing their illness, and responding appropriately when children do take ill. In return, child growth and development affect the ways caregivers treat a child.

Parenting responsibilities also encompass activities that stimulate children to understand their wider natural and designed environments and engage children in affective interpersonal exchanges, as Bornstein and Putnick (2012) show. Cognitive caregiving introduces, mediates, and interprets the external world; describes and demonstrates; as well as provides children with opportunities to learn. Socioemotional caregiving includes all the ways caregivers guide children so that they can regulate their own affect and emotions, acquire communicative skills and interpersonal repertoires that are useful in forming and maintaining productive relationships, and induce motivational propensities and attitudinal sets that lead to personal satisfaction and productive activity.

Socializing children also entails managing and setting limits on their behavior. Caregivers around the world share a common goal of striving to guide children's development so that they grow into wholesome and well-functioning members of their families and communities. However, the behaviors that caregivers employ as a means to this end vary widely between and within countries as Lansford and Deater-Deckard (2012) demonstrate. The range of responses to children's behavior includes diverse forms of physical violence (spanking, slapping, and restraining), explanation and reasoning, isolation, and removal of privileges-to name a few. Variation in these behaviors is linked with caregivers' beliefs regarding adults' own roles as socializers and children's development on the one hand and on the other individual differences in children's socioemotional and cognitive attributes.

Finally, caregiving includes providing the materials and structures children need to maintain health, assure competence, and promote adaptive functioning, especially with respect to their home and local environments. Bradley and Putnick (2012) illustrate how caregivers influence children not only by what they do but also by how they structure the child's surroundings. Adults are responsible for the number, variety, and composition of inanimate objects (toys, books, tools) available to the child, the level of ambient stimulation, and the physical characteristics, safety, and cleanliness of the child's home. The amount of time children spend interacting with their inanimate surroundings rivals or exceeds the time children spend in direct social interaction with caregivers or others.

Out of the dynamic range and complexity of individual activities that constitute caregiving, these major domains of interaction can be distinguished. These domains are conceptually separable but also fundamentally integral, and each is developmentally significant. Together they constitute normative age-graded as well as normative history-graded influences on children (Baltes, Reese, & Lipsitt, 1980). Our deeper understanding of them also has vital

implications for intervention and policy, the topic of the concluding paper by Britto and Ulkuer (2012).

International Developmental Science

Children do not grow up alone, but always do so in specific social and physical contexts. Child development is inextricably intertwined with caregiving and culture because children survive and develop within their particular social, economic, and cultural setting. A central idea in developmental contextualism is that reciprocal relations between individuals and the contexts within which they live comprise the essential processes of development (Lerner & Kauffman, 1985; Magnusson, 1995; Magnusson & Stattin, 1998, 2006). As children in different international contexts experience widely varying conditions in developmental, social, economic, and cultural situations, those contexts can be expected to dramatically influence children's physical, social, emotional, and cognitive development (Baltes et al., 1980; Bornstein, 2009; Cole & Packer, 2011; James & Prout, 1997).

Studies of development, caregiving, and context are requisite to encompass the full scope of childhood. However, context-related limitations continue to constrain our global and international understanding of child development and caregiving: A narrow participant database in research is one (Serpell, 1990). Less than 10% of the literature in developmental science emanates from regions of the world that account for more than 90% of the world's population, and critics wisely reject broad generalizations derived from contextually restricted findings (Arnett, 2008; Bornstein, 1980, 1991, 2009; Henrich, Heine, & Norenzayan, 2010; Kennedy, Scheirer, & Rogers, 1984; Russell, 1984; Tomlinson & Swartz, 2003). As a corollary, the societies typically included in developmental research are usually highly similar: in them, families normally adhere to the same basic organization, and parents play the same fundamental roles and share many of the same primary goals for their children. In consequence, much less is currently known scientifically than is commonly acknowledged about children and caregivers generally or the diversity and functions of ecological contexts of child development and caregiving specifically. This restriction of range is equally limiting in terms of understanding idiosyncrasies of child development and caregiving as it is humbling to generalizations and universals about them. A more encompassing approach is advocated by empiricists and theoreticians alike as yielding a more comprehensive perspective on psychological and developmental processes and as critical for testing the limits of generalization of psychological and developmental phenomena. Science can only benefit from an enlarged empirical representation of the world's children, caregivers, and contexts. Studies that employ a wider contextual lens promise more penetrating insights into how children think, feel, act, and grow as they do. Such lessons also illuminate how broad or circumscribed are the presumed universals of child development, as well as how children's experiences in specific different settings shape the specific trajectories of their development.

This Special Section of *Child Development* focuses on documenting child and caregiver characteristics associated with international variation in developing countries and on charting relations among social, economic, and national variation on the one hand and on the other hand variation in the health, physical, mental, emotional, and social status in children. It is imperative to learn more about children in these places so that psychologists, educators, practitioners, and policy makers can better understand human development, effectively assist families, and promote children's healthy development world-wide.

All societies require certain behaviors of their member citizens (for example, care of infants, socialization of children, exchange of social control and responsibility across generations), and most if not all societies differentiate among members (for example, by promoting

gender or socioeconomic class distinctions). At the same time, context-specific patterns of child development and caregiving reflect specific adaptations to each specific society's setting and needs. Every ecological context has its own requisites and has evolved its own developmental agenda, and so child development and caregiving can be expected to adapt (in some degree) to specific contexts (Bornstein, 1991, 2002; Bronfenbrenner, 1979; Okagaki & Divecha, 1993). Comparative multinational studies contribute to identifying, distinguishing, and explaining general as well as specific patterns of child development (e.g., Benedict, 1938; Bornstein, 2009). In brief, multinational developmental inquiry, constructed within a sensitive contextual framework, provides the proper medium to explore and distinguish uniformity and diversity of psychological, social, economic, and cultural constructs, structures, functions, and processes. The developing countries reported about in this Special Section vary widely in terms of history and ideology, social and economic situations, beliefs and values, as well as other sociodemographic factors thought to influence child development and caregiving (see Table 1).

Country-Level Development and Child Development

The countries that are the principal subject of investigation in this Special Section all constitute developing nations (National Center for Children in Poverty, 1999; UNICEF, 2006). "Developing" is defined with reference to the World Bank's system of classification of economies based on gross national incomes per capita, quality of life (life expectancy, literacy rates), and economic diversification (labor force, consumption). Approximately 560 million children under 5 years of age – the age range that is the focus of the work reported here – live in such developing countries (Grantham-McGregor et al., 2007). Using this yardstick, the main economic and social risk factors affecting young children in these countries are described. Their economic conditions are understood with reference to the Gross Domestic Product or poverty status of a country. Social factors are considered with reference to life expectancy and literacy/educational attainment of residents of the country.

Around the globe, children and caregivers in developing countries tend to suffer deprivation of economic capital; specifically, there is both a lack of general economic infrastructure and families have access to only limited choices of goods and services. In many developing countries there is also a dearth of social capital; that is, there is limited interpersonal cohesion, civic investment, community participation, and social networks, norms of reciprocity, and availability of civil organization. Finally, many developing countries suffer concomitantly low levels of psychological capital, including individual locus of control, resiliency, and coping. As the prevalence of poverty abounds, so do definitions and conceptualizations. The United Nations (U.N.) defines poverty as "a human condition, characterized by the sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights." The focus of the U.N. definition falls on general deprivation, not just lack of income or capital.

Deprivation can be conceptualized as a continuum that ranges from no deprivation to extreme deprivation of food, safe drinking water, sanitation facilities, health, shelter, education, information, and access to services. Absolute poverty could be considered a form of severe deprivation. The U.N. typology of countries in poverty is derived from the Human Poverty Index which measures deprivation in basic human development and is constructed of four indicators: the percentage of people expected to die before 40 years of age, the percentage of adults who are illiterate, the percentage of people without access to safe water and health services, and the percentage of underweight children under 5 years of age. The World Bank definition of poverty focuses on consumption. That is, what are estimated expenditures, and does the individual/family have the income/resources to meet those

expenditures? This perspective is based on the notion that consumption of goods and services is the basic objective of both citizen and society and is the best indicator of individual and social welfare. Poverty in this framework is defined as consumption of less than a \$1 a day. Still other definitions of poverty focus on social exclusion, vulnerability, and powerlessness, emphasizing that poverty has more to do with social relationships and diminished ability to participate in society or a porous protective buffer against calamities, which increases vulnerability (Maxwell, 1999).

Even if there is no single definition of poverty, poverty has universal negative implications for early child development and childrearing. The literature from the developed and developing worlds has cogently demonstrated numerous noxious links between poverty and child development. These associations are all the more important, given estimates of the millions of children living in poverty (Harper, Marcus, & Moore, 2003). Using the framework of outcomes enumerated in the Convention on the Rights of the Child (Limber & Flekkoy, 1995) and further elaborated by Strand (2009), we discuss briefly the links between child poverty and survival, development, protection, and participation.

With respect to child development, children residing in poverty have worse physical health and development outcomes, including malnutrition, frequent disease, and a relatively high prevalence of stunting (low height-for-age; Grantham-McGregor et al., 2007; Korenman & Miller, 1997). Health problems associated with poverty during early childhood then become risk factors for developmental problems in later life, including impediments to physical, cognitive, and socioemotional achievement (Duncan & Brooks-Gunn, 1997; Evans, 2003; Gershoff, Aber, & Raver, 2003). With increased vulnerability comes the need for increased protection, as the link between poverty and protection has been well-documented (Walsh & Douglas, 2009). With respect to participation, self-efficacy and the ability to make decisions are key. The *Young Lives* project, a multi-country longitudinal study of child poverty, revealed that children living in low-resource contexts exhibit impaired cognitive and socioemotional development outcomes as evidenced, for example, in diminished self-esteem and educational aspirations (Dercon & Krishnan, 2009).

Associations between poverty and child survival, development, protection, and participation may be clearly established, but the pathways by which poverty affects children are far from fully articulated. A full discussion of these trajectories is beyond the scope of this Introduction; suffice it to say that we acknowledge the importance of understanding multiple pathways -- from distal governance policies to proximal caregiving practices -- in untangling how poverty affects children. For example, in addition to economic risk factors, social risk plays an influential role in child development and caregiving. To examine MICS results, we explore social risk factors of life expectancy, education, and gross domestic product.

General Method

The MICS3

At the World Summit for Children held in 1990, the World Declaration on the Survival, Protection, and Development of Children and its Plan of Action in the 1990s were adopted. Signatory governments pledged to monitor progress towards achieving goals elaborated in the World Declaration. In response, UNICEF developed the Multiple Indicator Cluster Survey (MICS), a nationally representative and internationally comparable household survey for countries to evaluate country-level progress of children and women in low- and middle-income countries in different regions of the world (UNICEF, 2006). The main purposes of the MICS are to support evidence-based policy formulation, assess trends, and measure disparities. The MICS plays a role in the global scene of planning and reporting on children and women, being a reliable source of data for many indicators that are difficult to

find otherwise. As the global context changes, the MICS evolves accordingly. Today, the MICS is one of the main tools used to measure progress towards the following international goals: the Millennium Declaration and the Millennium Development Goals (MDGs), the World Fit for Children (WFFC) Declaration and Plan of Action, and other major international commitments and sector specific goals, such as the Abuja Declaration of the African Summit on Malaria and the United Nations Assembly Special Session on HIV/AIDS (UNICEF, 2006).

Three rounds of MICS have been implemented: The first round was conducted around 1995 in more than 60 countries; MICS2 – a second round of surveys was conducted in 2000 in 65 countries; and MICS3 was carried out in over 50 countries in 2005–2007. The articles in this Special Section use data from the MICS3. Table 1 shows the countries that participated in the MICS3 and the number of households sampled in each country.

MICS3 Content

MICS3 has three questionnaires: a Household Questionnaire, a Questionnaire for Individual Women (15 to 49 years old), and a Questionnaire for Children Under Five (available at http://www.childinfo.org/mics3_questionnaire.html). Each questionnaire is composed of core, additional, and optional modules (Table 2), which are sets of standardized questions grouped by topics. The basic criteria for inclusion of MICS3 indicators were their relevance to MDG, WFFC, and UNICEF goals, international agreement on indicators, previous testing, feasibility of collecting data, and proven quality.

The Household Questionnaire covers topics such as household composition and characteristics, education level and schooling of household members, child labor, water and sanitation, and support to children orphaned and made vulnerable by HIV/AIDS. Optional household modules cover disability, child discipline, security of tenure and durability of housing, and maternal mortality. The household questionnaire is administered to every household drawn for the survey sample. Some questions or modules focus on household members in specific age groups. Although any adult household member is eligible to be interviewed for most of the household modules, the only eligible respondent for modules on Child Labor, Child Discipline, and Disability are the mother or primary caregiver of the child.

The Questionnaire for Individual Women is administered to every woman between 15 and 49 years of age living in the household and aims to collect data on women's characteristics, child mortality, maternal and newborn health, marriage/union, contraceptive use, knowledge about and behavior regarding HIV/AIDS, malaria, polygyny, female genital mutilation, and sexual behavior, with optional modules on unmet needs, security of tenure, and attitudes toward domestic violence. Due to sensitive questions and to avoid biased answers, this survey was conducted by trained female interviewers.

The Questionnaire for Children Under Five collects data on all children under 5 in the household. The respondent is the mother or primary caregiver of the child. The topics covered by this questionnaire include children's characteristics, birth registration and early learning, Vitamin A, breastfeeding, care of illness, malaria, immunization, and anthropometry, with optional modules on child development and source and cost of supplies of oral rehydration solution, antibiotics, and antimalarials.

In total, the three questionnaires contain 42 modules, 21 of which are core, 8 are additional, and 13 are optional. It was recommended to countries to use all relevant core modules. Additional modules focus on issues that may be applicable only to certain countries. Optional modules were included if a country had particular interest in topics such as child

development, child discipline, disability, or domestic violence. The MICS3 covers a large array of topics and has significant flexibility that allows countries to adapt the survey to their particular situations and needs but keeps comparability across participating countries through standardized questions and administration. Being aware that at the country level customization of the questionnaire is necessary, some criteria for customization were established. The golden rule was to customize questions to country needs, but not to change comparability among countries (for international indicators). The basic criteria for customization were: (a) relevance to the country situation, (b) applicability (e.g., use of the child mortality module in high mortality settings), (c) overall size of questionnaires, and (d) clearly defined country priority/knowledge gaps. The MICS were designed by UNICEF to provide comparable information across countries that implement the surveys. For example, the items that were introduced to MICS3 on cognitive and socioemotional caregiving and on discipline and violence were developed using an approach that included convening an international panel of experts to identify candidate items from existing validated measures; field testing candidate items via interviews and surveys in the Americas, South Asia, and Africa; and convening a second international panel of experts to evaluate item performance within and across diverse cultures and settings (Kariger et al., submitted).

In this Special Section, we use the MICS3 modules related to child nutrition (breastfeeding and care of illness), parenting (early learning and child development), discipline and violence (control), and home environment (household characteristics, water and sanitation, and child development) to shed light on central elements and surroundings related to child development and caregiving in developing countries. Although 51 countries conducted MICS3, for analyses in this Special Section we used 28 countries (some countries had not released their data to the public at the time of our analysis, and some countries did not include modules that contain data pertinent to our main interests). The 28 countries we include represent 11 countries in central and Eastern Europe, 4 countries in eastern Asia and the Pacific, 8 countries in Africa, 3 countries in the Middle East and North Africa, and 2 countries in Latin America and the Caribbean. The total number of families approximated 1,400,000 people in almost 300,000 households, but each article uses a subsample based on inclusion criteria for the topic of interest (e.g., families with children under 5 who completed a particular subset of questions). For the purposes of these studies, we randomly selected a target child under 5 from families with more than one child under 5. Also, because fewer than 1% of questionnaires were answered by a male respondent, we included only those households with a child under 5 whose female caregiver responded to the MICS3 Questionnaire for Children Under Five.

MICS3 Sampling

Each country was responsible for designing and selecting a sample. However, the MICS3 technical global team provided strong recommendations on the following: the survey sample should be a probability sample in all stages of selection, national in coverage, and designed in as simple a way as possible so that its field implementation could be easily and faithfully carried out with minimum opportunity for deviation from an overall standard design. Existing samples could be used only if they were valid probability samples (e.g., a Demographic and Health Survey on a labor force survey). When an existing sample could not be used, it was recommended to develop a frame for a new sample in accordance with the tenets of probability sampling. To foster simple implementation, implicit stratification was recommended. When this form of geographic stratification is used together with systematic probability proportionate to size (pps) sampling, the sample proportionately automatically distributes into each of a nation's administrative subdivisions as well as its urban and rural sectors. Furthermore, the recommended sample design was a three-stage sample. The first-stage, or primary sampling units (PSUs), were defined, if possible, as

census enumeration areas, and they were selected with pps; the second stage was the selection of segments (clusters); and the third stage was the selection of the particular households within each segment that were to be interviewed in the survey.

Depending on country conditions and needs, the design was likely to vary from one country to another with respect to the number of PSUs, the number of segments or clusters per PSU, and the number of households per segment, and, hence, the overall sample size. The MICS Manual (UNICEF, 2006) tables calculated sample sizes to be used by the country if the table values fit the country situation. As a rule of thumb, the number of PSUs were to fall in the range of 250 to 350, the cluster sizes (that is, the number of households to be interviewed in each segment) were to fall in the range of 10 to 30, and the overall sample size was to fall in the range of 2,500 to 14,000 households.

A country could decide, for its own purposes, that it wanted indicator estimates for subregions in addition to the national level. In that case, its sample design included a different stratification scheme and a greater number of PSUs so as to ensure adequate geographic representation of the sample areas in each subregion. In addition, the sample size for the survey increased substantially to provide reliable estimates for subregions or other subnational domains.

MICS3 Implementation

MICS3 implementation is a government owned process with strong technical (and in most cases financial) support from UNICEF country offices, regional offices, and the UNICEF MICS global team in New York City. In preparing for data collection, each country followed the same stages: (a) making logistical arrangements (setting up headquarters, contacting local authorities where the survey was to be carried out, forming field teams, arranging accommodation, transportation, and security), (b) preparing the questionnaire and training materials, (c) training fieldworkers, (d) selecting and preparing the equipment, (e) carrying out the pilot study, (f) setting up data processing (computers, staff), and (g) considering and solving ethical issues.

Field teams (interviewers and supervisors) were carefully selected and trained in interview techniques, contents of the questionnaires, field procedures, and use of equipment. Data processing started within weeks after the instigation of fieldwork. Data were entered using the CSPro software. All data were entered twice, and internal consistency checks were performed. Data were analyzed using the Statistical Package for Social Sciences (SPSS) and the model syntax and tabulation plans developed by UNICEF for this survey. After cleaning data files and checking data quality, countries prepared both preliminary and final technical reports. Finally, data were archived using purpose-designed software, to be used by different stakeholders and made available for analysis now and in the future.

The MICS global team played a critical role throughout, being responsible for the overall coordination and adherence to standards. More specifically, the team oversaw preparation of the survey tools and instruments, training of country teams, follow-up of country performance, checking data quality, and approving final reports. To minimize survey biases, non-sampling in origin, including non-response, erroneous response, and interviewer errors, to the extent possible, the UNICEF MICS3 team standardized implementation procedures and prepared technical documents and programs, such as the MICS Manual, data entry and tabulation programs, preliminary and final report templates, and standard tabulation plans to be used across participating MICS3 countries. Each country report has sets of data quality tables and sample error tables as well as detailed descriptions of field and data processing procedures; these procedures ensured data reliability. Prior to implementation of the MICS3 survey, UNICEF organized a series of workshops in each region, covering critical steps of

the survey, such as survey design and preparation, data processing, data analysis and report writing, and data archiving and dissemination. Workshops were organized for UNICEF country offices preceding the implementation phase in the majority of countries. In addition to the workshops, governments could seek consultation from UNICEF at any point in time from survey preparation to data analysis and reporting. Global MICS3 evaluation showed that tools and technical assistance provided were of high quality, and most importantly that data were of good quality (UNICEF, 2008).

The Human Development Index

In the substantive articles that follow, MICS3 data are related to key country-level indicators from the Human Development Index (HDI; UNDP, n.d.). The HDI was developed by the United Nations as a measure of the social and economic status of a country in preference to other ways of representing the general standard of living. The HDI ranges from 0 to 1 and has three major indices: Life expectancy (in years), education (composed of the adult literacy rate and the percentage of school-aged children enrolled in primary, secondary, and tertiary school), and gross domestic product (GDP; in purchasing power parity [PPP] in U.S. dollars). Each country's life expectancy, education, and GDP were scaled from 0 to 1 (based on minimum and maximum values of 25–85 years for life expectancy; 0–100% for literacy and school enrollment; and \$100–\$40,000 PPP for GDP) and then averaged to compute the country's HDI. The HDI is therefore multi-dimensional. Although life expectancy, education, and GDP are related to one another, they may relate in different ways to domains of child development. For example, GDP may have more to do with the material resources available to children, whereas education may have more to do with values, beliefs, and knowledge that are shaped as individuals progress through a formal education system. We do not believe there is an underlying common cause of covariation among indices of HDI (which would be implicit in using only a single composite score). Because literacy and schooling could have different effects, we also examined both indices of the education index.

Countries with an HDI of .80 or greater are considered high, .50 to .79 medium, and .00 to .49 low. MICS3 data draw from the high, medium, and low regions of the HDI, and this tripartite division is used to organize countries in the following substantive articles. See Table 3. (The HDI was not available for Iraq and Somalia because of missing GDP data. However, the life expectancy index was available for both countries, and the education index was available for Iraq.) The 2006 version of the HDI was calculated for 179 countries and territories, and some data were available for an additional 15 countries or territories (UNDP, 2008). Our sample does not represent the 63 highest ranking countries on the HDI, as this Special Section addresses child development in developing countries. The sample of countries in this Special Section adequately represents the rest of the range on the HDI. The 28 countries represent 9% (7 of the 75) high-HDI countries, 17% (13 of the 78) medium-HDI countries, 23% (6 of the 26) low-HDI countries, and 13% (2 of the 15) countries for which the HDI could not be calculated.

Many existing composite indices reflect the general level of wealth present in a country rather than convey the broader array of conditions available to support human health and adaptive functioning in a country. The HDI offers a reasonable proxy for the level of support that is generally available for promoting human development in most poor nations. As such, it likely connects to many of physical and social aspects of the family and home environment with known relations to child development. The HDI was therefore selected for this series of analyses over other global social and economic indices, such as the Human Poverty Index or the GINI coefficient for several reasons. Primarily, the HDI is rooted in a development paradigm that focuses on human growth and the role of contexts and environments to support the development of human potential. The HDI is less about country

indicators per se, and more about the population that resides in the country. The focus of our analyses is on child development and building capabilities and potential. Given its underlying ethos and aims of economic and social development being the creation of environments to support healthy and productive human development (UNDP, 2009), we selected a macrolevel indicator that mirrored this conceptualization. The HDI provides a set of universally accepted standards for human development and represents a global shift in thinking about development from purely economic progress to human well-being (Azariadis & Drazen, 1990; Lucas, 1988; Mankiw, Romer, & Weil, 1992; Nelson & Phelps, 1966). We note, however, the HDI has been criticized on technical grounds (it is unlikely that equally weighting its constituent indices adequately conveys what countries afford their citizens for countries where there is considerable wealth) and on grounds that it does not consider the extent to which countries have policies that lead to a sustainable future (Sagar & Najam, 1998).

Main Aims, Analytic Plan, and Hypotheses

In the substantive articles in this Special Section, we address two common questions and adopt a common analytic plan that instantiates a holistic view of person-environment developmental science. The main aim of this Special Section is to describe the situations of multiple domains of early child development across developing countries. To do so, we analyzed how developing and underresearched countries in the world vary with respect to indicators of child nutrition (Arabi et al., 2012), parenting (Bornstein & Putnick, 2012), discipline and violence (Lansford & Deater-Deckard, 2012), and the child's environment (Bradley & Putnick, 2012) and how key indicators of national development (life expectancy, education, and GDP) relate to each of these substantive areas. By sharing a common analytic plan, each article highlights the extent to which countries vary in the situations of child nutrition, parenting, discipline and violence, and home environment, all of which promote or undermine child development and well-being. Our underlying assumption is that there are multiple domains of child development, as emphasized in the Convention on the Rights of the Child, and we hypothesized that countries vary in the situations of each domain.

Each substantive article first uses a deviation contrast to compare each country to the grand mean or overall effect of developing countries in the set, and uses the Human Development Index as a means of grouping countries. We compared each country to the grand mean of the developing countries in the sample instead of to a single comparison group because we were not interested in specific country contrasts so much as the general ordering of developing countries among one another on a continuum. The grand mean serves as a mid-point for determining which countries are performing better and worse than average, and so we discuss differences from the average effect, and not norms. The grand mean was also based on weighted statistics, meaning that each country was weighted equally, instead of countries with large samples weighting the sample more than countries with smaller samples.

We used the HDI to organize the 28 countries because we hypothesized that the extent of social and economic development of a country helps to explain some differences among countries in the situations of children. Each dependent variable was aggregated at the country level and correlated with the country HDI as well as with its three indices (life expectancy, education, and GDP). For any significant correlation with an index of the HDI, we controlled the other two indices of the HDI to remove the shared variance and isolate the effect to the independent contribution of the index in question. Controlling the other 2 indices of the HDI allowed us to arrive at a more precise estimate of the effects of the index in question. For example, when examining the correlation between the education index and the percentage of mothers who read books to their children under 5, we controlled the life expectancy and GDP indices. We would contend that macrolevel variables that compose the HDI likely antecede microlevel variables such as are tallied by the MICS. However, in these

reports we calculate correlations, and so we eschew language that indicates one or another direction of effects and restrict ourselves to the language of associations.

For all tests we report the significance level and a measure of effect size. In the first set of analyses of country effects, the sample sizes are so large that nearly every effect is significant. In this light, focus on the effect sizes is more meaningful than significances. We report effect sizes for the country deviations from the grand mean (analogous to Cohen's d ; Cohen, 1988) and from the overall effect (odds ratios). We interpret the size of effects for continuous dependent variables corresponding to Cohen's benchmarks for small (.20), medium (.50), and large (.80) d s, and they can be interpreted in terms of standard deviations from the grand mean. For example, an effect size of 1.5 means that the estimated marginal mean for that country was 1.5 standard deviations above the grand mean. The effect sizes for dichotomous dependent variables can be interpreted in terms of their odds of occurrence. For example, an odds ratio of 3.5 means that the odds of participants in that country engaging in the target behavior are 3.5 times the odds of participants in an average hypothetical country (i.e., the overall effect of country) engaging in the target behavior.

Strengths and Limitations of the MICS

The MICS provides child development with a unique and bountiful data set, but one whose limitations need to be acknowledged. At the same time that an impressive number of inhabitants (~1,400,000) in a substantial number (~50) underresearched developing countries are represented in MICS data, the sample sizes vary considerably across countries, not all countries provided all data, and comparable data from the developed world are missing (that being the case, articles in this Special Section include reports of comparable studies from developed nations as benchmarks). A proper sampling of national data are represented and well-trained national civil workers, demographers, et alia from the participating countries worked toward MICS development and administration, but culture is conspicuous in its absence, and the MICS user's ability to interpret and contextualize findings would be enhanced by richer ethnographic understanding of the beliefs, policies, and laws in each country. Furthermore, the unit of analysis is country, and the number of countries precluded reference to individual national literatures; for this reason we appealed to the HDI as an organizing and comparative construct. In this connection, the analyses in this Special Section focus on between, not within, country family patterns, which of course vary considerably both within and across samples. Items in the MICS are reports of mothers (or principal caregivers) about domains in child development, and so are not observations of actual domains, and no controls on reports (as for social desirability of responding) are instituted. That said, each item references specific domains associated with specific individuals within a specific time period, and so may constitute underestimates in the senses that responses would actually exceed the figures presented, and the numbers of individuals contributing to the child's life greater than just the mother (or principal caregiver). A complex multinational questionnaire such as MICS is challenging to administer, especially in developing countries. MICS indicators are cross-sectional (precluding causal as well as longitudinal analyses) and subject to historical time as well as seasonality effects (as on the prevalence of certain diseases and infections). These limitations on MICS data moderate their potential.

Each substantive article includes certain common independent variables and covariates. We emphasize multiple individual domains of children's rights, but acknowledge that the child functions and develops as a total, integrated organism (Magnusson & Stattin, 2006), that all these protective and risk factors affect multiple domains of children's development, and that MICS data do not provide information on all aspects of children in the developing world. In examining country differences in nutrition, parenting, discipline and violence, and the environment, we took several common covariates into consideration. We chose to covary

child age and gender because they likely affect child nutrition, how the child is parented, and/or objects found in the child's home environment. The number of children under 5 in the family and household crowding were used to index shared resources in the family, including tangible and intangible resources such as money, household objects, time, and attention. The systematic variance associated with these covariates was not of central interest in these reports. The child's age was computed in number of months from the child's birthday, asked in the Under Five Questionnaire. The child's gender was asked in the Household Questionnaire (coded 0 for boy, 1 for girl). The number of children under age 5 in the family was computed based on the respondent to the Under Five Questionnaire. Each respondent was assigned a unique identifier, and the number of children under 5 for which a single respondent completed an Under Five Questionnaire was counted. This method was used instead of counting the number of children under 5 in the household because sometimes multiple families resided in a single household and we were interested in family dynamics. Household crowding was computed as the number of household members divided by the number of bedrooms in the household. If there was no bedroom, we set the denominator to 1, assuming that all household members slept in the same room. Because the resulting variable was highly skewed and ranged from .02 to 24, we recoded crowding into 5 scaled categories: 1 (*1 or fewer people per bedroom*); 2 (*>1 to 2 people per bedroom*); 3 (*>2 to 3 people per bedroom*); 4 (*>3 to 4 people per bedroom*); 5 (*more than 4 people per bedroom*).

Child Development in the MICS

Together, the domains examined in this Special Section encompass central conditions considered important for the well-being of children around the world. Early childhood has long been thought of as a period in the life cycle when children are especially open to influences they carry with them long after they have left their family of origin. Biological parents endow a significant and pervasive genetic makeup to their children, with its beneficial or other consequences for children's developing proclivities and abilities. Beyond parents' genes, experience in the world is acknowledged as either the principal source of individual growth or as a major contributing component. It falls to children's principal caregivers to shape most, if not all, of young children's experiences. Caregivers intend much in their interactions with their charges: They are entrusted to ensure children's survival and health, promote children's mental development through the structures they create and the meanings they place on those structures, and foster children's emotional regulation, development of self, and social sensitivities and participation in meaningful relationships inside and outside of the family through the models they portray and the values they display. Of course, children influence which experiences they are exposed to, as well as how they interpret and act on their experiences, and therefore ultimately how those experiences affect them. In addition, children are affected by events and conditions outside the home. Although these reports include a number of sociodemographically varied groups, additional research with more diverse samples, fathers, and other child caregivers is needed to determine the full scope of caregiving surrounding young children. But, for young children, what happens in the family is often instrumental in determining how a child fares.

In *The Ecology of Human Development*, Bronfenbrenner (1979) identified the central importance for human ontogeny of its interrelated ecological levels, conceived as a series of nested systems. Bronfenbrenner described the microsystem as the pattern of activities, social roles, and interpersonal relationships experienced by the developing person in face-to-face settings at a given moment in life and the macrosystem as the superordinate level of the ecology of human development involving culture, institutions, and public policy. The microsystem is the focus of MISC3 data, and we attempt to set MISC3 microsystem data in the context of the HDI-defined macrosystem. "The form, power, content, and direction of the proximal processes effecting development vary systematically as a joint function of the

characteristics of the developing person; of the environment--both immediate and more remote--in which the processes are taking place; the nature of the developmental outcomes under consideration; and the social continuities and changes occurring over time through the life course and the historical period during which the person has lived" (Bronfenbrenner & Morris, 2006, p. 798). The mutual influences of caregivers and children have been identified as the best illustration of reciprocity in the person-environment system. The articles in this Special Section of *Child Development* examine all-important developmental tasks in large numbers of families in a significant number of developing countries and in so doing link macro- and microsystems of child development.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Countries Participating inMICS3 and Sample Size of Each Country

Country	Number of Households
Albania *	5,418
Algeria	29,476
Bangladesh *	68,247
Belarus *	7,000
Belize *	2,400
Bosnia and Herzegovina *	6,000
Burkina Faso	6,034
Burundi	8,220
Cameroon	9,856
Central African Republic *	11,941
Côte d'Ivoire *	7,600
Cuba	8,466
Djibouti	5,209
Gambia *	6,175
Georgia	14,250
Ghana *	6,302
Guinea-Bissau *	5,452
Guyana	5,280
Iraq *	18,136
Jamaica *	6,250
Kazakhstan *	15,000
Kenya	NA
Kyrgyzstan *	5,200
Lao	5,995
Lebanon	NA
Macedonia *	5,379
Malawi	31,200
Mauritania	10,937
Mongolia *	6,325
Montenegro *	2,575
Mozambique	NA
Nigeria	28,603
Palestinians in Lebanon	6,200
Palestinians in Syria	8,000
Sao Tome and Principe	5,646
Serbia *	9,953

Country	Number of Households
Sierra Leone *	8,000
Somalia *	6,000
Suriname	6,536
Syrian Arab Republic *	20,022
Tajikistan *	6,968
Thailand *	43,440
Togo *	6,600
Trinidad and Tobago	5,979
Tunisia	9,580
Turkmenistan	NA
Ukraine *	5,600
Uzbekistan *	10,505
Vanuatu	2,632
Vietnam *	8,356
Yemen *	3,979

NA = Neither data nor report are available for the country.

* Country is included in the analyses of this Special Section.

Table 2

MICS3 Questionnaires and Modules

Questionnaires	Modules		
	Core	Additional	Optional
Household	Household information panel	Extended household listing	Additional household characteristics
	Household listing	Children orphaned and made vulnerable by HIV/AIDS (for children 0–17 years old)	Security of tenure and durability of housing (for households in urban areas with large proportion of slum households)
	Education (for household members aged 5 or over; questions about school attendance are applied to 5–24 years old)	Insecticide-treated nets	Source and cost of supplies for insecticide-treated mosquito nets
	Household characteristics		Child discipline (for children 2–14 years old)
	Water and Sanitation		Disability (for children 2–9 years old)
	Child labor (for children 5–24 years old)		Maternal mortality (for household members aged 15 or over)
	Salt iodization		
Women	Women's information panel	Intermittent preventive treatment for pregnant women	Security of tenure
	Child mortality	Polygyny	Contraception and unmet need
	Tetanus Toxoid (for women who had a live birth within 2 years preceding the survey)	Female genital mutilation/cutting	Attitudes toward domestic violence
	Maternal and newborn health (for women who had a live birth within 2 years preceding the survey)	Sexual behavior (for 15–24 year olds only)	
	Marriage/union		
	Contraception HIV/AIDS		
Children under five	Under-five children information panel	Malaria	Child development
	Birth registration and early learning		Source and cost of supplies for ORS
	Vitamin A		Source and cost of supplies for antibiotics for suspected pneumonia
	Breastfeeding		Source and cost of supplies for antimalarial medicines
	Care of illness		
	Immunization		
	Anthropometry		

Table 3

Human Development Index by Country

HDI Rank	Country	HDI	Life Expectancy Index	Life Expectancy (years)	Education Index	Literacy (%)	Schooling (%)	GDP Index	GDP per capita
<i>High HDI</i>									
64	Montenegro	0.822	0.820	74.2	0.891	96.4	74.5	0.756	9,250
65	Serbia	0.821	0.813	73.8	0.891	96.4	74.5	0.760	9,468
61	Belarus	0.817	0.730	68.8	0.958	99.7	89.5	0.764	9,737
68	Macedonia	0.808	0.816	74.0	0.879	96.8	70.1	0.730	7,921
69	Albania	0.807	0.856	76.3	0.886	99.0	67.8	0.680	5,884
71	Kazakhstan	0.807	0.689	66.4	0.966	99.6	91.8	0.766	9,832
75	Bosnia and Herzegovina	0.802	0.827	74.6	0.874	96.7	69.0	0.704	6,801
<i>Medium HDI</i>									
81	Thailand	0.786	0.750	70.0	0.886	93.9	78.0	0.723	7,613
82	Ukraine	0.786	0.712	67.7	0.956	99.7	88.8	0.689	6,224
88	Belize	0.771	0.851	76.0	0.762	75.1	78.3	0.701	6,679
87	Jamaica	0.771	0.789	72.3	0.830	85.5	78.1	0.694	6,409
105	Syrian Arab Republic	0.736	0.814	73.9	0.769	82.5	65.7	0.625	4,225
112	Mongolia	0.720	0.688	66.3	0.913	97.4	79.0	0.561	2,887
114	Viet Nam	0.718	0.816	74.0	0.810	90.3	62.3	0.528	2,363
119	Uzbekistan	0.701	0.698	66.9	0.890	96.9	73.2	0.515	2,189
122	Kyrgyzstan	0.694	0.678	65.7	0.919	99.3	77.7	0.484	1,813
124	Tajikistan	0.684	0.691	66.5	0.896	99.6	70.9	0.464	1,609
138	Yemen	0.567	0.616	62.0	0.563	57.3	54.4	0.521	2,262
142	Ghana	0.533	0.574	59.4	0.605	64.2	52.9	0.421	1,247
147	Bangladesh	0.524	0.641	63.5	0.524	52.5	52.1	0.408	1,155
<i>Low HDI</i>									
159	Togo	0.479	0.550	58.0	0.543	53.2	56.6	0.345	792
160	Gambia	0.471	0.567	59.0	0.439	42.5	46.8	0.408	1,152
166	Côte d'Ivoire	0.431	0.378	47.7	0.450	48.7	37.5	0.466	1,632
171	Guinea-Bissau	0.383	0.351	46.0	0.541	62.8	36.6	0.257	467
178	Central African Republic	0.352	0.317	44.0	0.419	48.6	28.6	0.320	679
179	Sierra Leone	0.329	0.285	42.1	0.396	37.1	44.6	0.307	630

HDI Rank	Country	HDI	Life Expectancy Index	Life Expectancy (years)	Education Index	Literacy (%)	Schooling (%)	GDP Index	GDP per capita
N/A	Iraq	--	0.556	58.3	0.695	74.1	60.5	--	--
N/A	Somalia	--	0.375	47.5	--	--	--	--	--

Note. Data are excerpted and reproduced from UNDP (2008) Table 2. N/A=Not available because of missing data. -- = Data were not available. The HDI, Life Expectancy Index, Education Index, and GDP Index are on a scale from 0 to 1. Literacy is the percentage of adults who are literate. Schooling is the percentage of school-aged children enrolled in primary, secondary, and tertiary school. GDP per capita is listed in purchasing power parity in U.S. dollars.