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REVIEW ARTICLE

The social determinants of early child development: An overview

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Aim: This paper offers an overview of the current state of knowledge of the critical social determinants of child development and the complex ways in which these can influence health trajectories.

Methods: We conducted an overview of the research conducted by medical and social scientists in the attempt to uncover the conditions under which children reach optimal health and developmental.

Results: The first years of life represent a critical period during which trajectories of health vulnerability are determined by the complex interplay between biological, genetic, and environmental conditions.

Conclusions: There are fundamental principles of optimal child development that apply to all human beings, regardless of language and culture.

Key words: Social determinants; early childhood; developmental health; cross-cultural overview.

Introduction

Social determinants are factors characterising the environments that individuals are 'exposed' to and that can influence lifelong developmental and health outcomes. Social determinants act at different levels of influence, interact with one another, and represent a broad array of characteristics that are not of a biological or genetic basis but rather are entrenched in the interactions between individuals and social and physical environments: living conditions; interpersonal relationship between children, parents and peers; socio-demographics of the family; learning environments of day cares and schools; access to green

spaces; neighbourhood safety; and socio-political context are examples of some of the most important social determinants of child development.

The first years of life represent a critical period during which lifelong trajectories of health vulnerability are determined by the complex interplay between social determinants. Because of the potential for intervention on environmental conditions to improve health outcomes of populations, researchers, governments, and policy makers have been increasingly attempting to better understand the conditions under which children reach optimal health and developmental outcomes. For example, in 2004 the WHO Commission on Social Determinants of Health was formed with the objective of advancing knowledge and promoting global interventions on the social and environmental conditions that determine health and development throughout the lifespan.

Social determinants play a critical role in the early phases of conception, pregnancy and post-natal periods of children's development. Sensitive periods in brain and biological development start prenatally and continue throughout childhood and adolescence. The extent to which these processes lead to healthy development depends upon the qualities of stimulation, support, and nurturance in the social environments in which children live, learn and grow.¹ By school age, development has been influenced by factors at three levels of society: family, neighbourhood/village and the broader societal level. Socio-economic gradients in health across the life course begin as socio-economic gradients in early child development. Thus, the social environment is a fundamental determinant of early child development and, in turn, early child development is a determinant of health, well-being, and learning skills across the balance of the life course.

Key Points

- 1 We offer a cross-cultural analysis of the social determinants of early child development by integrating knowledge about different levels of aggregation (i.e., the family, neighbourhoods/communities, and socio-political context).
- 2 There are fundamental principles of optimal child development that apply to all human beings, regardless of language and culture.
- 3 There is a need for the international community to acknowledge that it is necessary to *simultaneously* promote the conditions that decrease child mortality while promoting the conditions for optimal child development.

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Processes of influence in early child development

Exposure to both beneficial and adverse circumstances over the life course will vary and will constitute a unique individual 'life exposure trajectory' which will manifest as different expressions of health and well-being. Three separate processes have been proposed to influence children's development – *latency*, *pathways* and *cumulative* processes – and are thought to operate in complex and interrelated manners.²

'Latent effects' occur when the effect of early exposure to biological or environmental factors becomes manifest years and decades later regardless of intervening experience. One vivid example is the 'fetal origins hypothesis' (or Barker Hypothesis); early 20th-century British birth records reveal that birthweight, placenta size and first-year weight gain increase the risk of cardiovascular disease in the fifth decade irrespective of factors that come in between.

'Cumulative effects' refer to the accumulation of positive and negative exposures over the life course, influencing health and development based on duration and intensity of exposure to these risk factors.^{3,4} Cumulative effects may occur either because of multiple exposures to a single recurrent factor or because of a series of exposures to different factors. An example of the former is that low parental occupational class throughout childhood is a stronger predictor of poor health in adulthood than parent's low occupational class at any single point in time.⁵ The effects of multiple exposures are seen in the 1958 British birth cohort where chronic illness and disability at age 33 were predicted by factors in early life (childhood socio-economic disadvantage and height), in adolescence (behavioural adjustment), and in adult life (injury and underweight/overweight).^{6,7}

Finally, 'pathway effects' refer to the way that early events set individuals on well-worn life pathways that, in turn, lead to particular social destinations that influence health and well-being. For example, early life social origins influence readiness for school⁸ and then, cognitive, emotional, and behavioural readiness for school subsequently affect school success and social adjustment.^{9–12} Later, adults with less education demonstrate poorer self-reported health, higher rates of mortality^{13–15}, more harmful health-related behaviours such as smoking and unhealthy diet, and failure to use preventive health care.^{16,17}

Latent, cumulative and pathway effects interact with daily experiences to 'explain' health status across the life course at various levels of social aggregation. Health status is an emergent property of the ongoing interactions between the individual (at each stage of development across the life course) and the conditions he or she encounters in the family, neighbourhood, and broader socio-political environments. In sum, the literature suggests that both life course and societal factors need to be considered together in order to fully understand children's developmental trajectories of education and health. For children who survive the early years, the complexity of the influences on the outcome of their development dramatically increases in the first years of life. The influences on optimal development act at different levels such as the family, the neighbourhood/community and the broader socio-political context.

Fundamental Principles of Optimal Child Development

While there is great variation between cultures of the specific 'meanings' assigned to social determinants, there are fundamental principles of optimal physical, socio-emotional, and cognitive/language development that apply to all human beings across cultures and ethnic backgrounds. In this paper we offer an overview of selected research findings that are less attached to specific cultural meanings but rather have greater relevance from a cross-cultural perspective.

In the following sections we present an overview of the literature outlining the different levels of influence for the most important social determinants of health and development from conception to young school-age children. The scope of this work includes prenatal development to 8 years of age from the standpoint of how it influences health across the life course taking a developmental perspective on schooling including education as a social determinant of health. The relative contribution to healthy child development of the three main levels of influence (i.e. the family, neighbourhood and socio-political context) is also discussed.

Prenatal and perinatal periods (from conception to birth)

The idea that maternal health and fetal development are critical determinants of adult health gained increased recognition throughout the 1990s. Particularly relevant to this emerging field of knowledge is what is now known as 'Barker's hypothesis'. Barker¹⁸ observed that low-birthweight infants had greater likelihood for developing coronary heart disease in their late middle age. The subsequent refinement of the Barker hypothesis¹⁹ focused on the idea that metabolism can become 'imprinted' during the prenatal period and that these permanent metabolic changes have an impact on health outcomes of individuals later in the life course. This hypothesis has given rise to a whole field of study of the developmental origins of adult disease (for a recent review see Chapin *et al.*²⁰). Currently, researchers are trying to understand the prenatal conditions (including contextual experiences) that are associated with healthy fetal growth and how post-natal conditions modify the influences of fetal experience.

Epidemiological research in the area of fetal health has also focused on maternal lifestyle factors that affect the growing fetus. Maternal nutritional intake is one of these critical factors affecting fetal health, low birthweight and subsequent health outcomes during childhood into adulthood. Poor nutrition is most frequently associated with family poverty, little or no parental education, and unstable working conditions or unemployment for families.²¹ This is particularly evident in developing countries struggling with great socio-economic disadvantages, lack of supply of nutritious food, and lack of effective prenatal education and preventive services. Thus, fetal nutrition is directly linked to structural factors. However, poor nutrition also affects fetal health outcomes in developed countries²⁰ where rising rates of obesity are observed among poor and uneducated populations that can be traced back to maternal fetal nutritional habits.²²

Poverty and malnutrition have been shown to negatively affect both maternal and fetal health and are two major factors responsible for higher infant and child mortality rates observed in developing countries. In 2000, about half of all child deaths globally occurred in India, Nigeria, China, Pakistan, Democratic Republic of Congo and Ethiopia. Two-thirds of these deaths were preventable, yet Jones *et al.*²³ suggests that appropriate interventions were currently available in these countries but were not effectively implemented. Maternal malnutrition is also associated with poor physical development including essential brain development of the fetus. Particularly important is the presence of fatty acids in the maternal diet. Many studies have shown that insufficient presence of fatty acids in the fetus retinal and neural membranes is associated with, among other things, reduced visual function and behavioural abnormalities in infants.^{24,25} Because specific fatty acids (i.e. n-6 and n-3) cannot be produced by the human body, these need to be accumulated by the fetus and accessed through placental transfer. A diet poor in fatty acids will not provide the fetus with these essential elements that are associated with healthy physical and brain development.

The developing brain

Studies in neurobiology, neurodevelopment and early intervention show that conception to school age is a critically important time in brain development. The brain of the developing fetus produces brain cells (neurons) at a rate of tens of millions per week such that by the time a baby is born, it has virtually all the neurons it will ever have. However, the neurons of a newborn are not connected together the way they are in an adult brain, but rather as a kind of random mass. Prior to school age there is a rapid process of 'sculpting' of neuron-to-neuron connections, during which some connections are reinforced and others die away. This process is crucially important because human experience is an essential determinant of the manner and degree of connectedness. A well-sculpted brain is one with a dense network of connections between various sensing and expressive pathways within the brain. The brain sculpts itself in response to two influences. The first influence is the wide range of stimuli in the environment of the newborn: visual, verbal, emotional, physical, touch, smell and taste. The second influence is biological: pre-programmed 'critical periods' in brain development, during which specific areas of the brain 'turn on' and become ready to receive environmental stimuli. During critical periods, neuron-to-neuron connections are sculpted that, in turn, engender specific developmental competencies: cognitive (language and quantitative), sensory, muscular, emotional, behavioural and social.⁴

Brain development and health

The current best understandings of the biological and environmental influences on children's development may be summarised as follows: spending one's early years in a not stimulating, emotionally and physically unsupportive environment will affect brain development in adverse ways and lead

to cognitive, social, and behavioural delays. The problems that children so affected will display early in school will lead them to experience much more acute and chronic stress than others, which will have both physiological and life-course consequences. Because the central nervous system 'talks to' the immune, hormone and clotting systems, systematic differences in life experience will increase or decrease levels of resistance to disease. This will change the long-term function of vital organs of the body and lead to socio-economic differentials in morbidity and mortality. This process whereby human experience affects health over the life course is called 'biological embedding.'

As the preceding paragraphs make clear, the process of development is influenced not only by a child's nutritional and health status but also by the kind of interactions – beginning *in utero* – an infant/child develops with caregivers in their environment. The notions of biological embedding and neuronal sculpting highlight the importance of contextual influences upon physiological development, the association between psychosocial environments and immune responses, as well as bonding/attachment and neuroendocrine responses.^{26,27}

There is a biological foundation for understanding social processes that can create individual differences in how children interpret and respond to their environment. We know that early environments influence individual children's development independent of and in combination with a child's biologic characteristics, and there is a growing awareness of specific periods in children's brain development that affect children's health outcomes over time.^{28–31} Cynader and Frost³² corroborate this position, observing that '[d]uring development, information from genetic sources, the material environments, and biological and social environments all contribute in complementary ways and at critical times during neural differentiation to forge competencies' (p. 154). Thus, knowledge of the presence or absence of enriched environments during critical periods of development is of utmost importance from conception to eight years of age and beyond. What happens to a child and the opportunities provided to a child in the first years are crucial in determining lifelong outcomes.

Child survival and child development

The social determinants of poorer birth outcomes (e.g. low birthweight) and higher rates of infant and child mortality are also critical determinants of child development and well-being among the survivors. Mortality rates are still unacceptable in most developing countries (88 per 1000 children – the rate in the world's poorest countries is ~120 per 1000). Yet many more children 'survive' and are exposed to environments and early experiences that *we need to pay attention to* as they can undermine children's ability to develop into healthy individuals.³³ Grantham-McGregor *et al.*³⁴ estimate that 200 million children in developing countries alone are not developing to their full potential. We need to *simultaneously* sustain attention to creating the conditions that decrease child mortality while maintaining focus on early child development. Thus, child survival and child development should not be conceived as two competing agendas but rather as synergistic agendas. A focus on survival to the exclusion of development begs the question *survival to what?*

Indeed, we should be placing emphasis on the *synergy between all* the developmental domains, including not only physical growth and nutrition for survival but also language/cognitive and social/emotional development.

Preschool and school age (from birth to 8 years of age)

A key requisite for optimal child development is secure attachment to a trusted caregiver, with consistent caring, support and affection early in life. A child's, adolescent's, and, ultimately, an adult's emotional health and habitual way of reacting to new situations have their basis in the early relationships between the infant/toddler and the people primarily responsible for his or her care. An infant develops the capability of emotional control before his or her first birthday and a sense of 'attachment' to his or her caregivers within the first year. This 'attachment' is the extent to which the infant develops trust that the caregiver will respond promptly and appropriately, thereby providing a sense of security. If the level of trust is high, the 'attachment' is described as 'secure'. Infants and toddlers with a secure attachment use the emotional and physical security that it provides as a base from which to explore things and people in the environment. Successful attempts at exploration increase the child's self-confidence and encourage more exploration. Thus, the child begins to learn about and master his or her environment and to gain in both competence and self-confidence.²

While the environments that children live in shape their long-term health, nutrition for newborns and infants continues to play a critical role where adequate supplies of fatty acids need to be provided by the infant diet. During the first months of life, breastfeeding plays an important role in providing children with the necessary nutrients. The advantages of breastfeeding in the first year of life are well documented.³⁵ Not only is breastfeeding associated with healthier physical, brain and social development but in developing countries exclusive breastfeeding can be protective of several types of diarrhoeal disease which is one of the primary causes of infant and child mortality.³⁶ Breastfeeding also encourages important attachment processes with the caregiver, providing children with feelings of security. Beyond infancy, nutrition will continue to play a critical role in children's ability to learn. Children who are hungry during school are prevented from benefiting from education both in developed and developing countries^{37–39}, while younger children may be impaired in their ability to interact effectively with their physical and social environments.

Family influences

Families are the first environments with which children interact from birth. They are critically important in providing children with stimulation, support and nurturance.³⁷ These qualities, in turn, are influenced by the resources that families have to devote to child-raising (strongly influenced by income), their style of parenting, and their tendency to provide a rich and responsive language environment (strongly influenced by parental levels of education). Thus, family-level characteristics may influence children's development in both a positive and a

negative manner, as risk and protective factors.²⁹ While the concept of 'family' may differ depending on the socio-cultural and historic context in which it is observed (e.g. immediate family, extended family, village or clan) here we refer to family as relationships defined by kinship links to the child and the prospect of links of intimacy to the child. We suggest that the definition of 'family' or 'household' is less critical than defining the characteristics of 'optimal early childhood environments' that support child development and transcend any particular definition of 'family'.⁴⁰

Over three decades ago North American researchers began observing that children who lived in families with very low income did not acquire the same level of verbal and cognitive skills as children who did not live in poor families.⁴¹ It was argued that poverty put children at risk because of the deficiencies in resources associated with poverty such as poor nutrition, including calcium, vitamins, and protein deficiencies, which are all essential elements for healthy physical development and cognitive growth. Recent studies have also documented that children from economically disadvantaged families have poorer academic achievement, social skills and cognitive functioning than children who are not from economically disadvantaged families.^{42–47} These same studies have identified other important social aspects of a child's environment that are associated with a healthy early child development. Factors such as adequate maternal nutrition, maternal mental and physical health, parental stress and depression, parenting styles, unemployment, limited or no income, housing conditions, and neighbourhood quality are some of the most important determinants of early child development identified in recent research. These family-level characteristics have important implications for both optimal child health outcomes and school achievement.

Poverty and cognitive/language development

Living in family poverty has long been implicated in children's health, development, school performance and achievement,^{30,48,49} and poor health in adulthood.^{30,50–52} For example, Hart and Risley⁵³ found that race, ethnicity and gender did not matter for language acquisition for young children but that social class did matter. Compared with their more economically advantaged counterparts, there were significant differences in the richness of the language environment for children from economically disadvantaged families, which resulted in the children having poorer language acquisition. Family poverty can also affect the extent to which children's basic needs are met: needs such as safe housing, nutritious meals and high-quality child care.⁵⁴ Brooks-Gunn studied the effects of family income on behaviour and IQ and found that psychological resources such as family networks of support, high maternal education and positive maternal mental health mediated children's scores. In addition, Brooks-Gunn, Berlin and Fuligni⁵⁵ have demonstrated that the home environment can either buffer or exacerbate the effect of low family income on children's cognitive ability.

Family-level factors, such as low maternal education, poor maternal mental health and lack of family networks, have been demonstrated to pose risks to early child development.^{2,54} In the case of poor parental mental health, in situations of extreme

poverty or high levels of family stress (which could be associated with either of the preceding factors), important parent–child interactions may be impaired, resulting in fewer opportunities for learning experiences in the home.^{31,56} Single parenthood has also been shown to be more highly associated with depression, three times the level found in co-parenting individuals. When socio-economic factors are considered, the rate of single-parent depression drops to only twice that of co-parenting individuals.⁵⁷ As stated earlier, depression and adverse child outcomes are linked. For instance, the severity and chronicity of maternal depression are predictive of disturbances in child development.⁵⁸

Parenting and child development

Parenting style is a fundamental influence on child development. Infancy/early childhood is the period during which interactions with parents provide the foundations for development of trust that is an essential element for children to ‘know’ that they can safely explore environments and learn from those explorations.^{59–61} A ‘responsive’ parenting style is what allows children to safely explore environments, and that responsive parenting consistently provided in the early years puts children on a positive developmental trajectory throughout childhood and adolescence.⁶² In turn, children who have successfully explored environments and have had positive learning experiences during their infancy and early childhood are more likely to develop cognitive abilities that are needed to assimilate information from one learning experience and apply it to other similar contexts.⁶³ Parental behaviours such as positive reinforcement, displays of warmth and affection, and consistent disciplinary strategies (known as authoritative parenting) result in fewer child behaviour problems and relate positively to academic competence and positive peer relations that, in turn, enhance a child’s health.^{43,64} The benefits of positive and responsive parenting have been widely documented and relate to the socio-emotional domain^{56,59,65} as well as to the development of cognitive abilities.⁶⁶ While some literature associates negative parenting strategies with low income, Chao and Willms’s⁶⁷ study, using data from the Canadian National Longitudinal Survey of Children and Youth, demonstrated that both positive and negative parenting practices were found at all levels of socio-economic status. Positive parenting strategies have also been shown to provide a buffer for poor child outcomes in families experiencing adverse circumstances. For instance, positive parenting has been found to buffer the expected effects of factors such as financial strain and parental divorce through building children’s coping resources.^{2,68}

The ability of parents to provide positive parenting can be hindered by socio-economic or personal circumstances such as unemployment, stress and/or depression. Several studies have documented that women who live in poverty with young children are more likely to be depressed than non-low-income women.^{45,69–71} In turn, maternal depression is associated with language and cognitive problems, poor social skills, and behavioural problems in infancy and early childhood.^{72–75} The effect of parental depression on the ability of children to engage in social interactions and object recognition are observable as early as 2 months of age.⁷⁶ In addition, infants of depressed mothers

show a greater degree of ‘stress’ response as indicated by higher heart rate and cortisol levels than infants of non-depressed mothers.⁷⁷ Furthermore, mothers with depression have been found to have difficulties in providing their children with positive and responsive parenting.^{78–83}

Research on family and parental influences on early child development has produced some lessons that should apply world-wide. However, such research has also been primarily produced in developed Western societies, limiting the extent to which our current knowledge applies to other cultures, especially those in developing countries. Yet it is reasonable to conclude that fostering family environments that are stimulating, supportive and nurturing will *benefit all children regardless of geography, ethnicity, language or societal circumstances*.³⁷

Neighbourhood influences

At the level of the ‘neighbourhood’ (i.e. neighbourhood, village or local community), children growing up in a safe area that is ‘cohesive’ in relation to children – where it mobilises resources formally (creates programmes) and informally (treats its children like they belong there) – are less likely to be vulnerable than children from similar family backgrounds living in unsafe and non-cohesive neighbourhoods. Neighbourhood characteristics influence children’s development in a variety of ways^{84,85}: through stresses (exposure to toxins, and social and psychological conditions such as high crime rates), through social organisation (role models, collective efficacy and shared values), through institutions (function of schools, police, neighbourhood services, etc.) and through ‘epidemic’ forces (power of peer influences).

Neighbourhood safety, cohesion, and crowding are a few of the factors that may influence family practices, family psychological well-being, and thus children’s development.^{2,86–91} For example, concerns regarding safety for children as well as parents might affect a child’s opportunity to participate in physical activity in venues such as neighbourhood playgrounds. Such limitations have a domino effect, inhibiting a child’s social experiences. Research also shows that neighbourhood cohesion may act to diminish the effects brought on by safety issues, as social networks may provide supportive enclaves where families and children feel safe.⁸⁹

Neighbourhood-level factors influence different child developmental outcomes to different degrees. Two recent reviews^{92,93} have reported that the socio-economic status of the neighbourhood demonstrates the most consistently powerful effects on children’s health but that research with school-age children provides the most consistent evidence of neighbourhood-level effects. Once children enter school, they have an immediate increase in their social networks and *potential* resources from which they can draw, as the influence of teachers and other professional, as well as school dynamics (positive or negative), shape children’s lives at this age.⁴⁸ For instance, Hertzman, Brooks-Gunn and Kohen (1999) found that family characteristics buffered the neighbourhood effects of school-readiness more for toddlers than for older children. These findings suggest that neighbourhood effects for school readiness measures may be stronger for children who have more interaction with their neighbourhoods. School-aged children’s interaction with their

environments increases at a time when they may not have the resources for dealing with challenging neighbourhood conditions such as high crime, lack of cohesion, dangerous roadways and more.⁹⁴ Reviews showed that neighbourhood effects are stronger for cognitive and academic indicators than for behavioural and mental health measures,^{92,93} while Drukker *et al.*'s⁸⁴ research suggests that children's mental health was associated with the degree of informal control in the neighbourhood.

One notable gap in our knowledge base is evidence on the degree to which village environments in developing countries provide successful nurturance for their children. It has often been suggested that developing-country village life provides a social/emotional environment and a sense of belonging that reinforce children's well-being in what might otherwise be an unbearable encounter with the living conditions of their society.

Socio-political context

The socio-political context refers to the national wealth and the economic trajectory of a given society, income distribution, patterns of employment and migration, and longstanding attitudes to mothers and children, all of which directly or indirectly influence the conditions under which children grow up, live, and learn. Embedded in these socio-political factors are *fundamental* causes of lack of attention to early child development and, also, to preventable inequalities in early child development. In the case of the family, there are practical issues of the degree to which the public sector (state) or civil society in some form has the capacity or political or cultural will to intervene in private life.

In the developing nation context, societies struggle with the atrocities of war, slavery, gender selection and discrimination, HIV/AIDS pandemic, and other basic survival issues such as access to clean water and proper sanitation infrastructure. In the developed nation context, poverty, its causes and its consequences are vastly different than for developing countries. However, even in these nations, socio-political context has major implications for the well-being of children, influencing the proportion of the childhood population exposed to poverty and the availability of resources crucial for early child development. Equally important are the differences that exist *within* each country with respect to special populations and/or geographical areas. For example, one of the greatest challenges for countries such as Canada, the United States, Australia, and New Zealand is the elimination of the gap between the health and educational outcomes of Aboriginal children and those same outcomes among non-Aboriginal children. For example, the infant mortality rate for Aboriginal children living in the central interior of British Columbia, Canada is almost three times as high as the rest of the population.⁹⁵ The interior region of British Columbia is a rural area where a greater proportion of Aboriginal people live in remote reserve communities. In fact, more than 50% of the Aboriginal population live in rural communities, and the incidence of low-income people among the Aboriginals of British Columbia is about 32% compared with 13.5% among the non-Aboriginal population.⁹⁶ This is only one example of significant health inequality in a developed country

(i.e. urban vs. rural, Aboriginal vs. non-Aboriginal) that is influenced by the broader socio-political context.

Family economic circumstances are a well-known influence on early child development. Within any given society the *average probability* that families with children will lack the resources to provide for them will be set by the overall wealth of that society. However, across the planet, child outcomes differ dramatically among developing countries with similar gross domestic products *per capita*. Thus, if family conditions matter for early child development then it follows that policy that affects families matter, too, whether directly through provision of income or indirectly through policies that shape the environments where children grow up, live and learn.

While the evidence on the influence of redistributive policies on family poverty is relatively robust, the relationship between macro-policy factors and other key determinants of early child development (such as parenting and neighbourhood conditions) is less well understood.

We know that socio-economic gradients exist in all countries; we know that policies influence the level of child poverty; and we know that neighbourhood/village conditions are determined in part by social policies, for example, the rationalization of services and downsizing of health care, welfare and social services policy, and community programming. Broader social, health and environmental policies (upkeep and presence of playgrounds and green space, presence of neighbourhood policing office, placement of public libraries, availability of enrichment programmes, and quality preschools) influence neighbourhood conditions, which affects children's development. It has been posited that the social meanings that people attach to their environmental circumstances ultimately affects their health and contributes to the social gradients of health observed in population-health studies.^{9,30} Nonetheless, while we can make these intuitive connections about direct or indirect effects, there remains a dearth of literature specifically linking social policy to early child development.

Conclusions

The critical importance of the first years of life is well acknowledged by researchers and policy makers alike. There is also ample evidence in the scientific literature that the outcomes of early child development become lifelong determinants of health.

The scope of this work was to provide an overview of the literature on the social determinants of early child development and integrate knowledge about the different levels of aggregation here described with the life course implications of early child development from a cross-cultural perspective. By highlighting the complex interplay that exists between the various levels at which social determinants act, this overview provides some general principles that can guide wealthy and developing countries in improving children's developmental outcomes during the early years of life and through critical transitions such as entry to school. While it is important to identify general principles and mechanisms of functioning of social determinants, it is imperative that researchers continue thriving for a

better understanding of how the outcome of the interplay between social determinants is determined by specific cultural and geographical contexts.

References

- Richter L. *The Importance of Caregiver-Child Interactions for the Survival and Healthy Development of Young Children: A Review*. Geneva: Department of Child and Adolescent Health and Development, World Health Organization, CAH, 2004.
- Hertzman C. The case for an early childhood development strategy. *ISUMA* 2000; **1**: 11–18.
- Hertzman C, Power C, Matthews S, Manor O. Using an interactive framework of society and lifecourse to explain self-rated health in early adulthood. *Soc. Sci. Med.* 2001; **53**: 1575–85.
- Keating D, Hertzman C, eds. *Developmental Health and the Wealth of Nations. Social, Biological, and Educational Dynamics*. New York: Guilford Press, 1999.
- Power C, Manor O, Matthews S. The duration and timing of exposure: effects of socioeconomic environment on adult health. *Am. J. Public Health* 1999; **89**: 1059–65.
- Jefferis BJMH, Power C, Hertzman C. Birth weight, childhood socioeconomic environment, and cognitive development in the 1958 British birth cohort study. *BMJ* 2002; **325**: 305–10.
- Power C, Li L, Manor O. A prospective study of limiting longstanding illness in early childhood. *Int. J. Epidemiol.* 2000; **29**: 131–9.
- Duncan GJ, Brooks-Gunn J, eds. *Consequences of Growing up Poor*. New York: Russell Sage Foundation, 1997.
- Hertzman C, Wiens M. Child development and long-term outcomes: a population health perspective and summary of successful interventions. *Soc. Sci. Med.* 1996; **43**: 1083–95.
- Maggi S, Hertzman C, Kohen D, D'Angiulli A. School proportion of highly competent children, neighbourhood socioeconomic characteristics, and class composition. *J. Educ. Res.* 2004; **98**: 109–14.
- Power C, Manor O, Fox J. *Health and Class: The Early Years*. London: Chapman & Hall, 1991.
- Tremblay RE. When children's development fails. In: Keating D, Hertzman C, eds. *Developmental Health and the Wealth of Nations*. New York: Guilford Press, 1999; 55–71.
- Kunst AE, Geurts JJ, Berg JVD. International variation in socioeconomic inequalities in self-reported health. *J. Epidemiol. Community Health* 1995; **49**: 117–23.
- Feldman JJ, Makuc DM, Kleinman JC, Cornoni-Huntley J. National trends in educational differentials. *Am. J. Epidemiol.* 1989; **129**: 919–33.
- Pappas G, Queen S, Hadden W, Fisher G. The increasing disparity in mortality between socioeconomic groups in the United States, 1960 and 1986. *N. Engl. J. Med.* 1993; **329**: 103–9.
- Winkleby MA, Jatulis DE, Frank E, Fortmann SP. Socioeconomic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. *AJPH* 1992; **82**: 816–20.
- Davey Smith G, Hart C, Blane D, Hole D. Adverse socioeconomic conditions in childhood and cause specific adult mortality: prospective observational study. *BMJ* 1998; **316**: 1631–5.
- Barker DJP. Fetal origins of adult coronary heart disease. *BMJ* 1995; **311**: 171–4.
- Osmond C, Barker DJP. Fetal, infant, and childhood growth are predictors of heart disease, diabetes, and hypertension in adult men and women. *EHP* 2000; **108** (Suppl. 3): 545–53.
- Chapin RE, Robbins WA, Schieve LA, Sweeney AM, Tabacova SA, Tomashek SA. Off to a good start: the influence of pre- and periconceptional exposures, parental fertility, and nutrition on children's health. *EHP* 2004; **112**: 69–78.
- Karp RJ, Cheng C, Meyers AF. The appearance of discretionary income: influence on the prevalence of under- and over-nutrition. *Int. J. Equity Health* 2005; **4**: 10.
- Drewnowski A, Specter SE. Poverty and obesity: the role of energy density and energy costs. *Am. J. Clin. Nutr.* 2004; **79**: 6–16.
- Jones G, Steketee RW, Black RE. How many child deaths can we prevent this year? *Lancet* 2003; **362**: 65–71.
- Innis SM. Perinatal biochemistry and physiology of long chain polyunsaturated fatty acids. *J. Pediatr.* 2003; **143** (Suppl. 4): S1–8.
- Innis SM. Essential fatty acid metabolism during early development. In: Burrin DG, ed. *Biology of Metabolism in Growing Animals*. Amsterdam: Elsevier Science, 2004; 235–74.
- Coe CL. Psychosocial factors and psychoneuroimmunology within a lifespan perspective. In: Keating D, Hertzman C, eds. *Development Health and the Wealth of Nations: Social, Biological, and Educational Dynamics*. New York: The Guilford Press, 1999; 201–19.
- Suomi SJ. Developmental trajectories, early experiences, and community consensus: lessons from studies from rhesus monkeys. In: Keating D, Hertzman C, eds. *Development Health and the Wealth of Nations: Social, Biological, and Educational Dynamics*. New York: The Guilford Press, 1999; 185–200.
- Barker D, ed. *Fetal and Infant Origins of Adult Disease*. London: BMJ Books, 1992.
- Bronfenbrenner U. Ecology of the family as a context for human development: research perspectives. *Dev. Psychol.* 1986; **22**: 723–41.
- Wadsworth MEJ. Health inequalities in the life course perspective. *Soc. Sci. Med.* 1997; **44**: 859–69.
- Willms JD. A study of vulnerable children. In: Willms JD, ed. *Vulnerable Children*. Edmonton: University of Alberta Press, 2002; 3–22.
- Cynader MS, Frost BJ. Mechanisms of brain development: neuronal sculpting by the physical and social environment. In: Keating D, Hertzman C, eds. *Development Health and the Wealth of Nations: Social, Biological, and Educational Dynamics*. New York: The Guilford Press, 1999; 153–84.
- Victoria CG, Wagstaff A, Schellenberg JA, Gwatkin D, Claeson M, Habicht J. Applying an equity lens to child health and mortality: more of the same is not enough. *Lancet* 2003; **362**: 233–41.
- Grantham-McGregor S, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B. Developmental potential in the first 5 years for children in developing countries. *Lancet* 2007; **369**: 60–70.
- American Academy Work Group on Breastfeeding. Policy statement on breastfeeding and the use of human milk. *Pediatrics* 1997; **100**: 1035–9.
- Mitra AK, Rabbani F. The importance of breastfeeding in minimizing mortality and morbidity from diarrhoeal diseases: the Bangladesh perspective. *J. Diarrhoeal Dis. Res.* 1995; **13**: 1–7.
- Pelto G, Dickin K, Engle P. *A Critical Link, Interventions for Physical Growth and Psychological Development: A Review*. Geneva: Department of Child and Adolescent Health and Development, World Health Organization, CAH, 1999.
- Powell CA, Walker SP, Chang SM, Grantham-McGregor SM. Nutrition and education: a randomized trial of the effects of breakfast in rural primary school children. *Am. J. Clin. Nutr.* 1998; **68**: 873–9.
- Winicki J, Jemison K. Food security and hunger in the kindergarten classroom: its effect on learning and growth. *Contemp. Econ. Policy* 2003; **21**: 145–57.
- Ramey CT, Ramey SL. Prevention of intellectual disabilities: early interventions to improve cognitive development. *Prev. Med.* 1998; **27**: 224–32.
- Birch HG. Nutrition, growth, and mental development – eightieth annual meeting of American pediatric society introductory remarks. *Am. J. Dis. Child* 1970; **120**: 395.

- 42 Conger RD, Conger KJ, Elder GH, Lorenz FO, Simons RL, Whitbeck LB. A family process model of economic hardship and adjustment of early adolescent boys. *Child Dev.* 1992; **63**: 526–41.
- 43 Conger RD, Elder GH, Lorenz FO, Simmons RL, Whitbeck LB. *Families in Troubled Times: Adapting to Change in Rural America*. New York: De Gruyter, 1994.
- 44 Duncan GJ, Brooks-Gunn J, Klebanov P. Economic deprivation and early childhood development. *Child Dev.* 1994; **65**: 296–318.
- 45 Liaw F, Brooks-Gunn J. Cumulative familial risks and low-birthweight children's cognitive and behavioural development. *J. Clin. Child Psychol.* 1994; **23**: 360–72.
- 46 McLoyd VC. The impact of economic hardship on Black families and children: psychological distress, parenting and socio-emotional development. *Child Dev.* 1990; **61**: 311–46.
- 47 Smith JR, Brooks-Gunn J, Klebanov P. The consequences of living in poverty for children's cognitive and verbal ability and early school achievement. In: Duncan GJ, Brooks-Gunn J, eds. *Consequences of Growing up Poor*. New York: Russell Sage Foundation, 1997; 132–89.
- 48 Engle PL, Castle S, Menon P. Child development: vulnerability and resilience. *Soc. Sci. Med.* 1996; **43**: 621–35.
- 49 Gissler M, Rahkonen MJ, Hemminki E. Social class differences in health until the age of seven years among the Finnish 1987 birth cohort. *Soc. Sci. Med.* 1998; **46**: 1543–52.
- 50 Lundberg O. Childhood conditions, sense of coherence, social class and adult ill health: exploring their theoretical and empirical relations. *Soc. Sci. Med.* 1993; **44**: 821–31.
- 51 Rahkonen O, Lahelma E, Huuka M. Past or present? Childhood living conditions and current socioeconomic status as determinants of adult health. *Soc. Sci. Med.* 1997; **44**: 327–36.
- 52 West P. Health inequalities in the early years: is there equalization in youth? *Soc. Sci. Med.* 1997; **44**: 833–58.
- 53 Hart B, Risley TR. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore, MD: Paul H. Brookes Publishing Co., 1995.
- 54 Brooks-Gunn J. Children in families in communities: risk and intervention in the Bronfenbrenner tradition. In: Moen P, Elder GH Jr, Lusher K, eds. *Examining Lives in Context*. Washington, DC: American Psychological Association, 1995; 467–519.
- 55 Brooks-Gunn J, Berlin LJ, Fuligni AS. Early childhood intervention programs: what about the family? In: Shonkoff JP, Meisels SJ, eds. *Handbook of Early Childhood Intervention*, 2nd edn. New York: Cambridge University Press, 2000; 549–88.
- 56 Bornstein MH, ed. *Handbook of Parenting*. Mahwah, NJ: Erlbaum, 1995.
- 57 Somers M, Willms JD. Maternal depression and childhood vulnerability. In: Willms JD, ed. *Vulnerable Children*. Edmonton: University of Alberta Press, 2002; 211–28.
- 58 National Institute of Child Health and Human Development (NICHD). Early Child Care Research Network. Are child developmental outcomes related to before- and after-school care arrangements? Results from the NICHD study of early childcare. *Child Dev.* 2004; **75**: 280–95.
- 59 Ainsworth M, Blehar M, Waters E, Wall S. *Patterns of Attachment: A Study of the Strange Situation*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc, 1978.
- 60 Bornstein M, Tamis-LeMonda CS. Maternal responsiveness and cognitive development in children. In: Bornstein MH, ed. *Maternal Responsiveness: Characteristics and Consequences*. San Francisco, CA: Jossey-Bass, 1989; 49–61.
- 61 Bruner J. The ontogenesis of speech acts. *J. Child Lang.* 1975; **2**: 1–19.
- 62 Landry SH, Smith KE, Miller-Loncar CL, Swank PR. Predicting cognitive-linguistic and social growth curves from early maternal behaviours on children at varying degrees of biologic risk. *Dev Psychol.* 1997; **37**: 387–403.
- 63 Rovee-Collier C. Time windows in cognitive development. *Dev Psychol.* 1995; **31**: 147–69.
- 64 Brody G, Flor D. Maternal resources, parenting practices, and child competence in rural, single-parent African American families. *Child Dev.* 1998; **69**: 803–16.
- 65 Sroufe LA. The role of infant-caregiver attachment in development. In: Belsky J, Nezworski T, eds. *Clinical Implications of Attachment*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc, 1988; 18–38.
- 66 Olson SL, Bates JE, Bayles K. Mother-infant interaction and the development of individual differences in children's cognitive competence. *Dev. Psychol.* 1984; **20**: 166–79.
- 67 Chao RK, Willms JD. The effects of parenting practices on children's outcomes. In: Willms JD, ed. *Vulnerable Children*. Edmonton: University of Alberta Press, 2002; 149–66.
- 68 Armistead L, Forehand R, Brody G, Maguen S. Parenting and child psychosocial adjustment in single-parent African American families: is community context important? *Behav. Ther.* 2002; **33**: 361–75.
- 69 Kaplan GA, Roberts RE, Camacho TC, Conyne JC. Psychosocial predictors of depression – prospective evidence from the human-population laboratory studies. *Am. J. Epidemiol.* 1987; **125**: 206–20.
- 70 Radloff L. Sex-differences in depression – effects of occupation and marital-status. *Sex Roles* 1975; **1**: 249–65.
- 71 Hall LA, Williams CA, Greenberg RS. Supports, stressors, and depressive symptoms in low-income mothers of young-children. *Am. J. Public Health* 1985; **75**: 518–22.
- 72 Murray L, Hipwell A, Hooper R. The cognitive development of 5-year-old children of postnatally depressed mothers. *J. Child Psychol. Psychiatry* 1996; **37**: 927–35.
- 73 Abrams SM, Field T, Scafiti F, Prodromidis M. Newborns of depressed mothers. *Infant Ment. Health J.* 1995; **16**: 233–9.
- 74 Murray L. The impact of postnatal depression on infant development. *J. Child Psychol. Psychiatry* 1992; **33**: 543–61.
- 75 Cogill SR, Caplan HL, Alexandra H, Robson KM, Kumar R. Impact of maternal postnatal depression on cognitive-development of young-children. *BMJ* 1986; **292**: 1165–7.
- 76 Campbell SB, Cohn JF. Prevalence and correlates of postpartum depression in first-time mothers. *J. Abnorm. Psychol.* 1991; **100**: 594–9.
- 77 Field T. Infants of depressed mothers. *Infant Behav. Dev.* 1995; **18**: 1–13.
- 78 Gelfand DM, Teti DM. The effects of maternal depression on children. *Clin. Psychol. Rev.* 1990; **10**: 329–53.
- 79 Goodman S. Understanding the effects of depressed mother on their children. In: Walker EF, Cornblat B, Dwoekin R, eds. *Progress in Experimental Personality and Psychopathology Research*, Vol. 15. New York: Springer, 1992; 47–109.
- 80 Murray L. Postpartum depression and child development. *Psychol. Med.* 1997; **33**: 253–60.
- 81 Murray L, Cooper PJ. Effects of postnatal depression on infant development. *Arch. Dis. Child.* 1997; **77**: 99–101.
- 82 Webster-Stratton C, Hammond M. Maternal depression and its relationship to life stress, perceptions of child behaviour problems, and child conduct problems. *J. Abnorm. Psychol.* 1988; **16**: 299–315.
- 83 Burbach DJ, Bordin CM. Parent-child relations and etiology of depression: a review of methods and findings. *Clin. Psychol. Rev.* 1986; **6**: 133–53.
- 84 Drukker M, Kaplan C, Feron F, van Os J. Children's health-related quality of life, neighbourhood socio-economic deprivation, and

- social capital: a contextual analysis. *Soc. Sci. Med.* 2003; **57**: 825–41.
- 85 Beauvais C, Jenson J. *The Well-Being of Children: Are There 'Neighbourhood Effects'?* Ottawa: Canadian Policy Research Networks, Inc., 2003.
- 86 Dunn JR, Hayes MV. Social inequality, population health, and housing: a study of two Vancouver neighbourhoods. *Soc. Sci. Med.* 2000; **51**: 563–87.
- 87 Hertzman C, Kohen D. Neighbourhoods matter for child development. *Transition* 2003; **33**: 3–5.
- 88 Sampson RJ. Linking the micro- and macro-level dimensions of community social organization. *Soc. Forces.* 1991; **70**: 43–64.
- 89 Sampson RJ, Raudenbush SW, Earls F. Neighbourhoods and violent crime: a multilevel study of collective efficacy. *Science* 1997; **77**: 918–24.
- 90 Shonkoff JP, Phillips DA, eds. *From Neurons to Neighborhoods: The Science of Early Childhood Development.* Washington, DC: National Academy Press, 2000.
- 91 Wilson WJ. *The Truly Disadvantaged: the Innercity, the Underclass, and Public Policy.* Chicago: University of Chicago Press, 1987.
- 92 Duncan GJ, Raudenbush SW. Assessing the effects of context in studies of child and youth development. *Educ. Psychol.* 1999; **34**: 29–41.
- 93 Leventhal T, Brooks-Gunn J. Moving to opportunity: an experimental study of neighborhood effects on mental health. *Am. J. Public Health.* 2003; **93**: 1576–82.
- 94 Irwin LG, Johnson JL, Henderson A, Dahinten VS, Hertzman C. Examining how contexts shape young children's perspectives of health. *Child Care Health Dev.* (Online Early Articles). doi:10.1111/j.1365-2214.2006.00668.x.
- 95 Interior Health Authority. *Child Health Report.* 2004.
- 96 Statistics Canada. *2001 Census: Analysis Series: Aboriginal People of Canada: A Demographic Profile.* Ottawa: Minister of Industry, 2003, 2003.

Quiz

- What period is believed to be most critical for the determination of lifelong health outcomes?
 - Conception
 - Early childhood
 - Between conception and mid childhood
 - Adolescence
 - Young adulthood
- At what levels are social determinants most influential on healthy child development?
 - Family
 - Neighbourhood/community/clan
 - Socio-political system
 - None of the above
 - All of the above
- Which of the following statements is not true?
 - Social determinants are those factors describing the role of social environments in healthy child development
 - The biology and genetic predisposition of the individual plays a more important role than the social environments in determining healthy child development
 - Social determinants of child development interact with biological and genetic predispositions in important ways
 - There are fundamental principles of optimal child development that apply to all human beings, regardless of language and culture.
 - There is a need for the international community to acknowledge that it is necessary to *simultaneously* promote the conditions that decrease child mortality while promoting the conditions for optimal child development.

Answers

- [c\)](#)
- [e\)](#)
- [b\)](#)