Amina Abubakar Fons J. R. van de Vijver *Editors*

Handbook of Applied Developmental Science in Sub-Saharan Africa



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Amina Abubakar would like to dedicate this work to her late parents Neema Swaleh and Abubakar Ali.

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Applied Psychology, European Association of Psychological Assessment, International Academy for Intercultural Research, and the International Test Commission.

Dr. van de Vijver is the former editor of the *Journal of Cross-Cultural Psychology* and serves on the board of various journals; he has evaluated manuscripts for over 100 journals as ad hoc reviewer. He has been vice dean for research and vice dean for education of his faculty and vice director of Babylon, the interdisciplinary research center for studies of multicultural societies at Tilburg University. He was a former president of Division 2 (Assessment and Evaluation) of the International Association of Applied Psychology and the European Association of Psychological Assessment. He is the President of the International Association for Cross-Cultural Psychology.

Part I Introductory Note

Introduction 1

Amina Abubakar and Fons J.R. van de Vijver

Rationale for the Book

Africa is a continent with many young people (United Nations, 2015). In 2015, it was estimated that 41% of Africa's population were children less than 15 years of age (United Nations, 2015). Moreover, projections indicate that if the population growth continues at the current rate, by 2050 half of the world's children will be living in Africa. This population boom has the potential to provide the necessary workforce to propel Africa to economic prosperity, which has so far been elusive. These children can only be an opportunity for Africa if they are thriving and doing well. Statistics so far show that African children represent a large proportion of children from low- and middle-income countries (LMICs) who are failing to achieve their potential (McCoy et al., 2016). Due to exposure to various risk factors, such as infectious diseases, poor nutritional status, and chronic poverty, millions of children in LMICs are at risk of not achieving their potential (Lu, Black, & Richter, 2016; Walker et al., 2007; Walker et al., 2011). A recent analysis of data from 2010 indicated that a significant proportion of children in LMICs are at risk of

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experiencing poor development. According to McCoy et al. (2016):

We estimate that 81.0 million children ages 3 and 4 y (95% CI 49.2 million, 113.3 million) in LMICs experienced low cognitive and/or socioemotional development in 2010, with the largest number of affected children in sub-Saharan Africa (29.5 million; 44.0% of children ages 3 and 4 y), followed by South Asia (27.8 million; 37.8%) and the East Asia and Pacific region (15.2 million; 26.0%). (p. 2)

Moreover, these authors noted that low development scores were associated with stunting, poverty, male sex, rural residence, and lack of cognitive stimulation (McCoy et al., 2016). It is, therefore, important to develop intervention programs and strategies to address developmental problems faced by African children if these children are to achieve their promise of propelling Africa's development. Therefore, a book such as the current handbook which synthesizes the evidence is highly needed and timely as it contributes toward offering practitioners and policy makers a resource for their work.

The second reason for the book arises from the underrepresentation of African research and findings in developmental science. In general, psychology as a field is highly skewed (Arnett, 2008). Most of the empirical work informing psychological theories emanates from North America and Western Europe (Tomlinson & Swartz, 2003) with very limited data coming from resource-con-

strained settings, such as sub-Saharan Africa (Marfo, Pence, LeVine, & LeVine, 2011). This underrepresentation of Africa calls for concerted efforts to broaden the database and to synthesize the existing knowledge base so as to make existing data more available to stakeholders.

Finally, several scholars, such as Marfo, Pence, Serpell, and Nsamenang, have argued that even the little data arising from Africa is "Eurocentric in nature" (Marfo, 2016; Marfo et al., 2011; Pence & Marfo, 2008). The core of their argument is that the extant literature is based on conceptualizations and theoretical backgrounds developed in North America and Western Europe (Marfo, 2016). They further note that the data collection methods and measurement procedures so far utilized in Africa were also largely developed in North America and Europe. Consequently, Africans have hardly had an opportunity to address the concerns of the continent from their point of view. These scholars argue that when studies are largely informed by Western theoretical and methodological approaches, they may fail to acknowledge complex cultural issues leading to biased results. This book addresses these concerns at various levels. First, among the authors, there is a good representation of African-based scholars and of scholars who have actively engaged in research in Africa over a prolonged period. The authors of the different chapters bring a wealth of experience from field work in Africa, thus providing an in-depth understanding of the developmental issues from an African perspective. Moreover, a lot of attention is paid to discussing methodological approaches that enhance the cultural sensitivities while carrying out studies in Africa. Here, for instance, we look at the potential of qualitative research in Africa, highlight approaches for developing tests in Africa, and discuss alternative Afrocentric approaches for doing research. We hope that this extensive approach to dealing with methodological concerns will provide the readers with a rich source of information to develop their appreciation of sociocultural influences in developmental psychology and would contribute toward more culturally sensitive work emanating from Africa.

The publication of this book is not meant to contribute to an indigenous African psychology that is independent of Western psychology. In our view, indigenous psychologies should enrich and be enriched by Western psychology. African developmental science can enrich developmental science in general as the continent harbors many unique cultural contexts for development. Studying how these contexts affect development will enable us to understand differences and similarities with non-African contexts. A truly universal psychology integrates studies done in multiple contexts so as to provide models that overcome the existing Western bias.

Principles Guiding This Book

In developing and shaping this book, we have been guided by principles arising from selected theoretical frameworks whose usefulness has been observed in various studies across the African context. In this section, we discuss these principles briefly. The starting point of the selected frameworks is that all development is "development in context" and that human development should always be interpreted in context.

Human Development Is Influenced by Multiple Layered Environments

In line with the bioecological model, in this book human development is approached as resulting from the influence of both biological and environmental influences. The book has been designed using the core tenets of a bioecological framework which indicates that the course of child development is shaped and influenced by both biological and environment factors including a child's day-to-day experiences (Sameroff, 1998). According to this framework, developmental and behavioral outcomes are caused by ongoing reciprocal interactions between individuals and their environment (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1993; Sameroff & Chandler, 1975). Child development happens in relationship with and as an inseparable part of the child's social context. According to the bioecological model, child development is shaped by conjoint and interactive effects of individual characteristics (e.g., health, age, and personality) with contextual factors (e.g., parenting behavior and socioeconomic status) (Bronfenbrenner, 1977; Sameroff, 1998). The ecological environment of the individual is seen as a set of nested structures, representing the microsystem, mesosystem, exosystem, and macrosystem. The microsystem is the most influential to the child since it consists of persons and institutions that directly interact with the child and stimulate or hinder developmental outcome. In this book, the microsystem is addressed through aspects such as examining the influences of maternal and paternal behavior, quality of stimulation at home, and sibling caregiving. The next layer is the *mesosystem*, which represents how the interaction between the persons and institutions in the microsystem influences child growth and development. The third level is the *exosystem*, which is made up of persons and institutions that do not directly interact with the child but whose activities indirectly impact on the child's development, like conditions at work for the parents. The world views, ideologies, and customs of specific cultural groups compose the macrosystem. This level affects child development through its influence on behavior and activities of adults surrounding the child (Bronfenbrenner, 1979; Bronfenbrenner & Morris, Contextual factors are hierarchically organized from the most distal macro-context (e.g., culture) to the most proximal micro-contextual factors (e.g., familial characteristics). Proximal micro-contextual factors exert relatively stronger influences in shaping outcomes than distal macro-contextual factors (Wachs & Rahman, 2013).

In refining the bioecological model to better suit risk and protective factors in the LMICs, Wachs and Rahman (2013) note three important points. Firstly, most of these risk factors covary (cluster); that is, children experiencing one risk factor (e.g., poverty) are at a higher probability of experiencing another one (e.g., exposure to pathogens) due to the lack of access to clean

water and adequate sanitation which in turn contributes to malnutrition due to wastage of consumed nutrients (see Fig. 1.1).

Secondly, given this clustering of various risk factors, the influence of a single risk factor may not be that strong, but the accumulation of risk is what tends to be most adverse for childhood outcomes. Lastly, in the examination of the different hierarchical contexts, risk factors could be divided into biological and psychosocial risk within the same level. For instance, within the microsystem, the biological risk would include infections and nutritional status, while psychosocial risk would include parental and caregiver characteristics (Wachs & Rahman, 2013) (see Fig. 1.1 for an illustration).

Sociocultural Niche as an Important Factor in Shaping Human Development

Influenced by anthropological traditions, cultural and cross-cultural psychology has gathered evidence to show that the socio-ecological-cultural niche within which a child grows up has a strong influence on child development (Harkness & Super, 1994; Weisner, 2002; Worthman, 2016). Early, very striking results showed that while the trajectory of child development may largely proceed in a similar manner, the pace and rate at which children acquire different skills and the value that is placed on the different skills may range sharply partly due to the sociocultural and ecological niches they are growing up in. For example, early research unveiled what was referred to as "African precocity" (Geber, 1958; Super, 1976; Warren, 1972) [note that some authors and scholars have criticized the use of this term since it takes a Eurocentric view of child development, as children from North America and Europe are taken to provide the standard rate of development, which is why African children were considered precocious]. During this period, it was reported that across numerous societies in Africa, children acquire early motor skills much faster (or at a relatively earlier age than children from Western countries). Paradoxically, it was

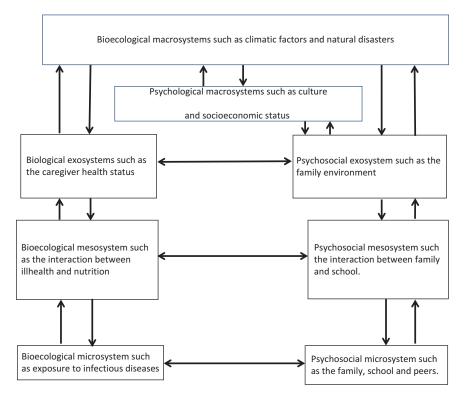


Fig. 1.1 An integrated model of biological and psychosocial environment. *Note*: This figure has been reprinted from Wachs (2003) with permission

simultaneously noted that around the age of 24 months or so, African children started slowing down until they eventually perform worse than children from other regions of the world (largely from those from North America and Western Europe where a lot of published data existed).

These observed differences in cross-cultural child development have been attributed to various factors. One potential source of cross-cultural variation in child development is caregivers' beliefs and practices regarding child development (Harkness & Super, 1996). For instance, it has been observed that African parents spend a lot of time with their children on motor activities. During these activities, they massage their children, place them in a sitting position early in life, and provide other activities to stimulate motor development. The range of these activities is thought to contribute to the early acquisition of motor skills in this context. Similar reports on the impact of parental beliefs and practices on child

development have been recorded with other development domains. For instance, in the 1970s, De Vries and De Vries reported that among the Digo's of Kenya, children were toilet trained very early in life [on average by 6 months] (De Vries & De Vries, 1977). This was achieved because the Digo's believed that children were capable of learning right from the very moment of birth (De Vries & De Vries, 1977). Consequently, Digo mothers started training their children while they were neonates. Digo mothers were observed to place the children on their laps and encourage them (through a hissing sound) to urinate. The training by Digo mothers was carried out at a scheduled time and in a consistent manner. Based on these practices, children were observed to have been toilet trained by 6 months on average which was almost 24 months faster than Kikuyu children and children from Western Europe.

Another source of cross-cultural variations in child development is what are considered adaptive

child-rearing practices adopted by each community to maximize the potential for the survival of not just the child but the whole community. An example of this can be seen from the work of Ed Tronick among the Efe in Congo (Tronick, Morelli, & Ivey, 1992). In a series of ethnographic work, Ed Tronick observed that among the Efe, a series of birth rites and rituals are carried out whose key aim was to ensure the child bonds to multiple caregivers (Tronick, 2007). For instance, in the first few days of life, a child is handled and breastfed by multiple adults. These activities were carried out to ensure that the children bonded with multiple caregivers so that if their mother passed away, they would still have an alternative caregiver. This kind of thinking was adaptive in a society where maternal mortality was extremely high. Moreover, the Efe lived in the forest, as a community they were exposed to an extremely high number of pathogens. For their young ones, building up immunity early in life was a key strategy in enhancing their survival chances. Exposing children to numerous adults early in life ensured that the children were exposed to a variety of pathogens.

Culturally Sensitive, Contextually Relevant, and Evidence-Based Intervention Can Make a Positive Change

We started the chapter by highlighting the numerous challenges on child development largely because early childhood is especially sensitive to brain insult. Under the right condition, the early years provide a great opportunity for recovery due to brain plasticity (Anderson, Spencer-Smith, & Wood, 2011). Empirical evidence from both basic and intervention science indicates that early childhood is a period of special sensitivity to experiences that promote development and that critical time windows exist when the benefits of early childhood development interventions are amplified (Black et al., 2017; Britto et al., 2017). The evidence indicates that intervention is most efficacious when implemented in the first 2 years of the

child's life, is targeted to the neediest, and uses multiple delivery channels (Pelto, Dickin, & Engel, 1999). Moreover, nurturing care and protection received from parents, family, and community has lifelong benefits including improved health and wellbeing and increased the child's ability to learn and earn. Britto and colleagues have defined nurturing care as "a stable environment that is sensitive to children's health and nutritional needs, with protection from threats, opportunities for early learning, and interactions that are responsive, emotionally supportive, and developmentally stimulating" (Britto et al., 2017, p. 91).

Given the fact that child development in LMICs is impacted on by multiple factors, an intervention targeting multiple areas (i.e., development, nutrition, social protection, and education) is likely to have the most benefit (Aboud & Yousafzai, 2015; Jensen et al., 2015). However, some sectors, such as health services, have been proposed as good entry point to establish contact with pregnant women (Richter et al., 2017), which provides the opportunity to implement interventions prenatally.

Additionally, while there are sensitive periods for intervention, it must be emphasized that both preventive and rehabilitative programs at any period of life are important to enhancing developmental outcomes. (Figure 1.2 presents some of the important interventions across the lifespan.) For resource limited settings such as sub-Saharan Africa, affordability and sustainability are key for the usefulness of any given intervention. Consequently, interventions that can use community-based, low-cost support programs are potentially very useful.

Lastly, moving an intervention from one cultural context to another without adequate adaptation may reduce or even eliminate its effects. It has been urged that it is important to ensure that every aspect of the intervention is tailored to its physical and cultural context. Some scholars have gone as far as suggesting that it is important to acknowledge that existing practices within the communities themselves can be rich sources of information to help plan targeted programs (Sternin, Sternin, & Marsh, 1998).

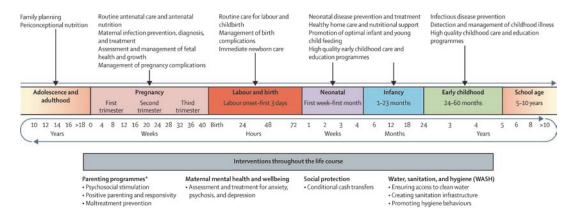


Fig. 1.2 Framework to promote young children through a multisectoral approach. *Note*: This figure has been reprinted from Britto et al. (2017) with permission

Our book is rich in examples of intervention strategies that have been tried and tested in sub-Saharan African settings and found to contribute significantly to improving outcomes for these children.

Overview of the Book

This introductory chapter forms the first section of this book. In this chapter, we have provided a rationale for the book, summarized the theoretical and conceptual issues guiding the book, and lastly, summarized the chapters in the book. This information provides the reader with a brief overview of the book. The second section of the book discusses the role of psychosocial factors in shaping child development. Parenting behaviors especially the home environment are discussed in two chapters. Moreover, given the specific caregiving context of Africa, we also discussed the role of alternative caregivers especially siblings and fathers. The chapter by Bornstein et al. forms the central chapter of this section. It presents data from more than 14 African countries and describes the contemporary situation of children in sub-Saharan Africa with successive foci on child growth, the home environment, parenting, and discipline, using data from the Multiple Indicator Cluster Survey (MICS). The MICS is a nationally representative, internationally compa-

rable household survey implemented to examine protective and risk factors of child development in developing countries. The chapter is unique in its use of population-based data to provide results from a national representative sample. The chapter concludes with some policy implications from these findings. Wekulo-Kitsao et al. link to the discussion from the previous chapter by focusing on the quality and quantity of stimulation in the home. In a study involving school-aged children in Kenya, the authors provide a detailed description of the home environment before examining the role of the home environment in promoting cognitive and motor functioning in middle childhood. Consistent with what has been reported from other parts of the world, they report that a stimulating home environment, where the child is exposed to a variety of toys, learning materials, and experiences, contributes positively to child development. Otto and Keller present data from their work among the Nso in Cameroon. In this chapter, they illustrate the cultural specificities of socioemotional development Cameroonian Nso children. They first introduce the cultural models of autonomy and relatedness as a conceptual framework to explain different belief and meaning systems shared by different cultural groups. They investigate Cameroonian Nso parental beliefs, their parenting practices, and their children's formation of attachment relationships and compare these results with those

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from middle-class German families. They conclude that the Nso families are more oriented toward relatedness and their early parenting behavior is more aimed at fostering relatedness which is in contrast to middle-class Western families and their orientation toward psychological autonomy in their socialization goals, caregiving strategies, and resulting attachment patterns. The following two chapters address, among other things, the policy and research implications of caregiving contexts. Abubakar and Van Baar review the limited data available on fatherhood in Africa. The review is supplemented with original data on the role of fathers from the point of view of both mothers and fathers from a rural setting in Kenya. The final chapter in this section is that by Mweru who addresses sibling relationships and its implications for the cognitive, social, and emotional development of children. She presents data from her work in Kenya to provide insight into the role of sibling relationships in shaping childhood outcomes.

Section 3 reviews and highlights the developmental problems associated with various medical conditions in Africa. Abubakar reviews the neurocognitive, mental health, and educational problems associated with infectious diseases. Two common infectious conditions are extensively reviewed (i.e., malaria and HIV) highlighting not only cognitive deficits associated with them but also discussing potential moderators and mediators. The chapter also reviews the impact of less well-known and studied conditions such as meningitis, neonatal sepsis, and jaundice. The key finding from this review is that different infectious diseases significantly and negatively impact on neurocognitive, mental, and education outcomes of children, thus contributing to them failing to achieve their potential. Additionally, it is noted that biomedical and psychosocial risk factors often interact to exacerbate the negative impact of different medical conditions, thus highlighting the need for interventions that are informed by both biomedical and psychosocial models. The second chapter in this section is by Nampijja; in this chapter, Nampijja looks at the cognitive effects of helminth infections on child development. The chapter starts by reviewing the literature on the cognitive impact of worm infection and deworming. The author then presents data from a large-scale study which investigated the impact of deworming on cognitive development. The results indicated that worm infection has a small effect on cognitive and executive function; these functions seem to be especially vulnerable to the negative effects of parasitic infections. The third article in this section is by Hapunda and Pouwer; they review an increasingly important, yet understudied problem, namely, the effects of diabetes in sub-Saharan Africa. Given the emphasis on communicable diseases, noncommunicable diseases rarely receive a lot of attention in the African context. This much-needed chapter raises awareness of the epidemiology of diabetes and its psychosocial consequences. The last chapter in this section is by *Gladstone*, and it highlights the impact of malnutrition on child development. The chapter starts by discussing the biological mechanisms by which malnutrition impacts on child development. It then goes on to discuss the neurocognineurodevelopmental impacts malnutrition from studies largely carried out in sub-Saharan Africa. The chapter takes a developmental perspective where data on the impact of malnutrition are presented based on the timing of malnutrition as the impact of malnutrition is expected to be moderated by timing and chronicity of exposure.

The fourth section in this book addresses methodological considerations when carrying out developmental science studies in Sub-Saharan Africa. The section starts with a chapter by Abubakar and Van de Vijver which discusses approaches to developing tests and scales for use in Africa. The chapter presents a systematic procedure that can be used to carry different processes (i.e., adoption, adaptation, or assembly) alongside approaches for evaluating the level of success in providing an adequate measure for the context in which they are working. The chapter by Demuth addresses how qualitative research can fruitfully contribute to applied developmental science in sub-Saharan Africa. Demuth argues that qualitative methodologies, particularly ethnographically informed discourse analysis,

provide empirical procedures that allow for the development of a culture-sensitive developmental science. The next chapter by Foxcroft discusses ethical issues around child development research in sub-Saharan Africa. Foxcroft notes that while some of the ethical challenges experienced in Africa are common in child development research internationally, some have a uniquely developing world or African flavor to them. The last chapter in this section is by *Nsamenang*. He raises issues and challenges pertaining to research in Africa upstream Euro-American intellectual traditions and scientific ethos. His chapter focuses on developing theories and methodologies that are rooted in and applicable in Africa.

Section 5 presents various state-of-the-art intervention strategies that have been found to hold great promise in improving developmental outcomes of children in sub-Saharan Africa. In the first chapter, Novak and colleagues discuss the development and initial field trial of the latest prototype computerized cognitive rehabilitation training program developed by Michigan State University's Games for Entertainment and Learning Lab. Klein and colleagues present a theoretical and practical framework for early intervention. The chapter describes the process of a Mediational Intervention for Sensitizing Caregivers (MISC) of infants and young children. The MISC is primarily concerned with enhancing parents' or caregiver's ability to provide children with quality interaction, consequently affecting their need system and creating dispositions that are essential for future learning. This chapter presents the basic reasons for implementation, processes of intervention, and outcomes of the MISC approach to early intervention, with a special emphasis on the implementation of the MISC in Ethiopia, Uganda, and Kenya and its potential relevance for other countries in Africa. The chapter by Serpell and colleagues presents a 4-year research and development program at CAPOLSA (the Centre for Promotion of Literacy in sub-Saharan Africa), aimed at enhancing literacy levels among Zambian children. The process of culturally adapting and evaluating a computer-mediated instructional resource developed in Finland, for effective intervention in an society, discussed is Community-based rehabilitation strategies are the focus of the chapter by Mpofu and colleagues. The chapter highlights the fact that CBR remains the most viable instrument for human development support in the sub-Saharan African region. The next chapter by Friedlander and colleagues discusses how Literacy Boost, a program based on findings from the mainly developed world literature, functions when it is placed in the sub-Saharan African context. Using data from schools in three countries in sub-Saharan Africa, they describe Literacy Boost and outline the research upon which Literacy Boost was designed. Moreover, the positive impact of Literacy Boost on the reading skills of students is reported.

In the *last chapter* of this book, *Theron* advocates the usage of research evidence to inform policy and practice. Theron urges that in resource-constrained settings such as those in sub-Saharan Africa where disadvantage is rife, researchers have a duty to apply credible research results toward enabling improved life-worlds, above all for children and young people. Drawing on her previous work with the Pathways to Resilience Study, South Africa, Theron demonstrates how authentic researcher-community collaborations support policy and practice uptake of research results.

Conclusion

Historically, psychology is firmly rooted in Western culture. It has taken very long to appreciate the link between its models and theories to its cultural context. Fields like developmental science and cross-cultural psychology were and are instrumental in overcoming the spatiotemporal limitations of Western psychology. A truly universal psychology should accommodate differences in behaviors across a wide variety of cultures. Africa and in particular sub-Saharan Africa have not played a strong role in psychology. However, after an era in which the need for African input in psychology was expressed strongly, we now seem to move to an era in which

African psychologists and studies conducted in Africa indicate how African can contribute to psychology, notably to studies that link the unique African context to psychological functioning. Important characteristics of this work were illustrated in the book, such as studies of the psychological sequelae of infections, hunger, or tropical diseases, the consequences of poverty, caregiving beyond the nuclear family, procedures to adapt psychological tests, and an emphasis on policy-relevant and immediately applicable research findings. A final hallmark of this work is the emphasis on high-quality methodology. Quality standards are maintained, both in quantitative and qualitative work. We hope that this book contributes to the further development of African psychology. We do not see African psychology as a discipline that is independent of Western psychology. Rather, African psychology can enrich and be enriched by psychologies from other parts of the world so that our discipline becomes more inclusive and our results more widely applicable and, hopefully, applied.

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