



Parental, Familial and Community Support Interventions to Improve Children's Literacy in Developing Countries: A Systematic Review

Elizabeth Spier, Pia Britto, Terri Pigott,
Eugene Roehlkepartain, Michael McCarthy, Yael Kidron,
Janis Glover, Daniel Wagner, Julia Lane, & Mengli Song

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BACKGROUND

The Problem, Condition, or Issue

For a majority of the world's children, despite substantial increases in access to primary school, academic learning is neither occurring at expected rates nor supplying the basic foundational skills necessary to succeed in the 21st century. As of 2010, approximately 61 million primary school-age children worldwide were not attending school. Among those attending school, academic learning is far from assured. For example, only 46 percent of children in Nicaragua achieve Grade 4 learning standards, a figure that drops to less than 5 percent in Malawi. In Ghana, as of 2008, four out of five young women who had completed Grade 6 were still illiterate or only partially literate (UNESCO, 2012). The significant lag in academic achievement tells us that schools alone do not fully meet children's needs for literacy development. Many reasons exist for these challenges in providing adequate literacy instruction within the school context. For example, a World Bank study found an average 19 percent teacher absence rate across Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda; and many teachers who were physically present were not spending their time teaching in the classroom (Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006). Even when both children and teachers are in the classroom, student learning can be significantly hampered by unfamiliarity with the language of instruction (Altinok, 2013), large class sizes because of an insufficient number of teachers, and teacher assignment practices that disproportionately allocate the lowest-performing teachers to the communities with the highest needs (UNESCO, 2014). Despite efforts and innovations in many countries, these problems will not be solved quickly, and alternative approaches are needed to support children's literacy development.

The most proximal contexts (i.e., a child's home and community) have a direct influence on literacy development. Numerous initiatives are underway globally to try to improve children's literacy development, including interventions that work through parents, families, and communities. These initiatives are intended to supplement children's school-based learning or provide alternatives for children who do not have access to pre-primary or primary education. Examples of such interventions include tutoring and peer-assisted learning, mobile libraries, programs to build parental knowledge on how to support children's literacy, literacy instruction outside regular schools (e.g., in the context of religious education), and the provision of educational media for use outside regular classroom instruction.

There are numerous such interventions in low- and middle-income countries (LMICs), but there is little information regarding which interventions have evidence for (or against) their effectiveness, and what that evidence reveals. Therefore, this review is focused on evidence of what works to improve children's literacy development in LMICs, with interventions that are focused on children between 3 and 12 years old and work through parents, families, and communities.

The Intervention

We will draw on two dimensions of learning: (1) contexts that support literacy learning and (2) learning outcomes in the areas of preliteracy and literacy. Ecological models have demonstrated that the most proximal contexts—particularly school, home, and community—are among the strongest influences on learning (Christenson & Reschly, 2010; Dickinson & Neuman, 2006). Within these contexts, influences can be categorized as human (e.g., families) and nonhuman (e.g., print). There have been studies of human influences, such as parent and child shared book reading, peer-to-peer learning, and community volunteers (Britto, Brooks-Gunn, & Griffin, 2006; Britto, Oketch, & Weisner, 2012). Nonhuman influences include access to print through environmental print, learning resources, and mobile libraries; interpersonal support from parents, tutors, and other community members; and access to print and learning support through digital means, such as educational radio or television and other technologies (Doiron, 2011). Some of these influences operate through naturally occurring interactions of daily life, whereas others operate through programs and services. Human and nonhuman influences can intersect to support children’s learning. For example, reading interventions may rely on community and parental engagement to support implementation (Lancy, Bock, & Gaskins, 2010), often with support from international organizations, national nongovernmental organizations (NGOs), and community based-organizations (Hoppers, 2006).

How the Intervention Might Work

Because literacy skills are acquired progressively, this study will use a developmental lens from emergent preliteracy skills to reading and writing. Therefore, this review includes interventions that are intended to improve children’s literacy development at any point from the pre-primary period through middle childhood (i.e., 3 to 12 years old). The conceptual framework for this study draws on the contextual pathways that are linked with literacy from a developmental perspective.

Five features characterize this model (see Figure 1):

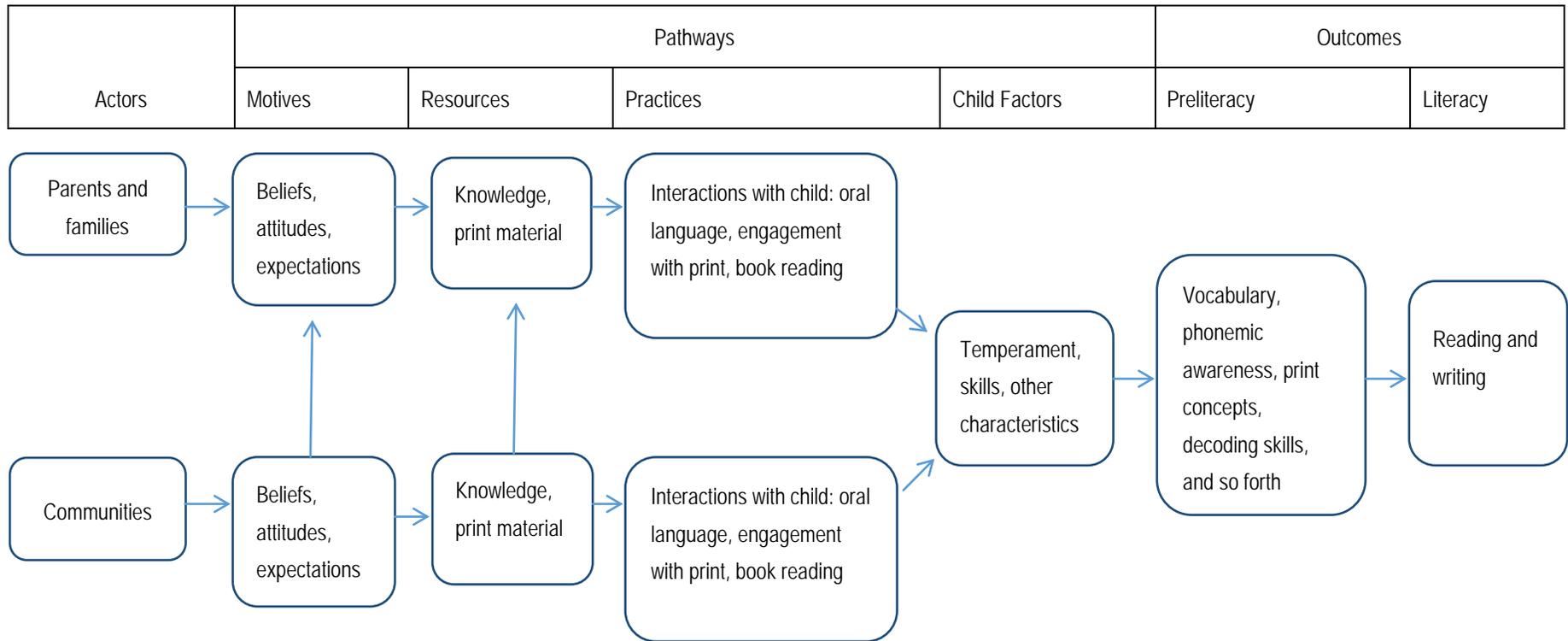
- Proximal contextual supports for literacy include the family and the community. The model differentiates family-level supports from community-level supports. These supports may supplement, complement, or compensate for more formal preschool- and school-based contextual influences.
- Pathways between these supports and child literacy outcomes can be mediated by three dimensions: (1) the attitudes, beliefs, and expectations of families and communities regarding children’s literacy learning; (2) the availability of resources, such as knowledge and print materials; and (3) the actual interactions or practices that families and communities engage in to promote literacy.
- Models of learning (including literacy) have demonstrated that development is a result of person-by-context interactions. The child is both an active participant in and

a recipient of family and community interactions that promote learning. Therefore, the conceptual model considers not only the role of the child but also his or her characteristics.

- Community members or organizations can affect child literacy outcomes by either engaging with children directly or acting on families (who in turn engage with children).
- Finally, given the evidence that early learning is one of the strongest predictors of later literacy skills, from a developmental perspective, the model considers outcomes for children between 3 and 12 years old.

In some family or community contexts, one or more of the pathways shown in Figure 1 may be weak or nonexistent, reducing the likelihood that a child will reach his or her full potential with regard to literacy development. The interventions that will be considered in the current review are expected to act on one or more weak or missing pathways, leading to improvements in children's literacy development. Each intervention we review will act on one or more pathways and include one or more preliteracy or literacy outcomes for children.

Figure 1. Nonschool Contextual Pathways to Literacy Learning



Why It Is Important to Do the Review

Policymakers and practitioners at both the individual country level and in multinational organizations increasingly want to select interventions that have documented and reliable evidence of their effectiveness. As discussed previously, poor literacy development is of persistent and significant concern in many countries. However, the available published research literature outside industrialized nations is quite limited, albeit growing, and there is a dearth of high-quality, quantitative studies. There also is a lack of balance in the quality and the quantity of evidence for intervention effectiveness across different contexts (e.g., more literature is expected to be available from middle-income countries than from low-income countries, despite the high level of investment in interventions for low-income countries). The field will benefit from knowing the types of interventions that have been subject to rigorous evaluation, as well as the evidence produced by those evaluations. There is already a high level of interest in the results of this review among large international development organizations (such as the U.S. Agency for International Development [USAID] and UNICEF), as well as smaller NGOs and academics across developing countries.

This review also is expected to provide comprehensive information about those models or approaches that have evidence supporting or refuting their effectiveness and models that are being used in the absence of evidence. Our objective for this work is to provide the evidence needed for NGOs, governments, and others to make informed decisions about interventions to improve children's literacy outcomes in LMICs. It will also include information to help end users understand the extent to which evidence is grounded in studies carried out in similar contexts (e.g., the level of parental literacy where family reading initiatives have been successful). Our advisory panel has indicated that this contextual information is vital for effective decision making.

We expect to find significant gaps in the availability of evidence for what works to improve children's literacy development in LMICs outside the formal education system. By highlighting the availability of evidence, we expect that our review will provide information that will help funders learn where they should invest evaluation resources.

Work products, such as the full literature review and shorter briefs, will be made available on each partner organization's website and through relevant information clearinghouses (such as USAID's Development Experience Clearinghouse and the Clearinghouse on International Developments in Child, Youth, and Family Policies at Columbia University). We will build on the Search Institute's extensive network of international and country-specific NGOs, such as Save the Children, World Vision International, YMCA International, and the International Youth Foundation. We will contact numerous other professional networks that are focused on global child and youth development, including UNICEF, the Alliance for International Youth Development, the Communication Initiative Network, the International Society for Child Indicators, and the UN's Committee on the Rights of the Child.

OBJECTIVES

The objective of this systematic review is to examine the availability of evidence and what that evidence says about the effectiveness of interventions to improve parental, familial, and community support for children’s literacy development in developing countries. This review will provide information about the contextual influences of parental, family, and community support on children’s literacy development skills by using interventions that target those influences.

We will explore the following questions:

1. What literacy interventions for children between 3 and 12 years old have recently been implemented outside formal education settings with parents, family, and communities in LMICs?
2. Which literacy interventions have been studied in a rigorous enough manner to provide information regarding their effectiveness?
3. Which interventions are most effective at building literacy skills?
4. What are the essential features of effective models?
5. What are the identified moderators and mediators of intervention effectiveness?
6. To what extent are the nature and the effectiveness of interventions influenced by contextual factors, such as cultural tradition, poverty, conflict situations, the availability of learning resources, or parental literacy?

The overarching goal of this review is to increase the availability of information for evidence-based decision making for international agencies, NGOs, and government policymakers.

Whether an intervention leads to improved child literacy outcomes is affected by the larger context, even if that intervention is effective at strengthening one specific aspect of the model. Human and material resources are required for interventions to be implemented with fidelity. For example, an intervention that shows parents how to engage in shared book reading will have little or no impact on children’s literacy development if no printed materials are available. Likewise, an intervention that engages parents in shared book reading with their children and improves children’s literacy may work well because it was introduced in a place where parents have the time and literacy skills to engage in reading with their children, plus print materials are available.

In addition to home and community contexts, the replicability and the scalability of an intervention depend on the availability of resources required to introduce and implement that intervention. For example, a successful mobile library initiative may require the acquisition and the maintenance of one or more vehicles, staff with basic training in managing a library, and so on. Therefore, to the extent that information is available, we will frame the results in terms of

contextual variables that may affect the replicability and the scalability of the intervention or approach, as well as the resources necessary to introduce and deliver the intervention. This information can be essential for stakeholders who are considering which intervention(s) may be right, given the local context and the resources available.

METHODOLOGY

This section addresses the criteria for study inclusion/exclusion, our search strategy, methods used in primary research, criteria for the determination of independent findings, study coding categories, statistical procedures, and the treatment of qualitative research.

I. Criteria for Inclusion and Exclusion of Studies in the Review

In this section, we address eligible designs and types of participants, interventions, and outcome measures that will define the criteria for including and excluding studies in this review.

Population, Intervention, Comparison, and Outcomes Model

The Population, Intervention, Comparison, and Outcomes model (Petticrew & Roberts, 2006) will be used to categorize the inclusion criteria of the literature by population, intervention, comparison, and outcome. Each criterion must be met for inclusion. A fifth and supplemental category—context—also may be considered.

Population: The target population will be children between 3 and 12 years old living in LMICs, as defined by the World Bank’s country income classification. In some countries, many children’s births are not registered, and exact ages may be unknown. Therefore, in the absence of information regarding exact ages, we will accept studies with children described as being of pre-primary or primary school age. Studies that focus on children with disabilities will be included, even though disabilities are not a distinct topic of interest here.

Intervention: The studies to be reviewed must be primary studies of interventions, not literature reviews or meta-analyses. Each intervention should address literacy or preliteracy skills and be delivered through the family or community members (e.g., volunteers). Interventions delivered within a school setting are acceptable only if the delivery mechanism is a parent or community members. In addition, different types of interventions (e.g., cash transfers, vouchers, and libraries) will be included if their purpose is to address literacy outcomes and they are not delivered within formal schooling. The intervention could be a program, a product, a policy, or a practice; however, the primary focus of the study should be aligned with the topic area of literacy.

Comparison: Eligible studies must include a treatment and a comparison group. We will include studies that use randomized control trials (RCTs) and regression discontinuity designs. We also will include quasi-experimental studies, provided that there is a baseline with no serious pretest differences on the outcomes of interest (mean baseline differences

must be $\leq .25$). We will exclude single-group, pre-post designs because of their weak internal validity. All other quasi-experimental studies will be included to the extent that methods exist for computing an appropriate measure of effect size. Studies that use complex research designs, such as propensity score matching or regression discontinuity designs, or that report on only complex statistical analyses, such as hierarchical linear models, may be excluded because there are no agreed-on effect sizes in the methodological literature that can be synthesized with more standard effect sizes. Thus, quasi-experimental studies with evidence of pretest differences will be excluded. The primary criterion for article selection is that it must contain an evaluation with a valid comparison group. To be valid, the comparison group must (1) be drawn from the same population as the intervention group and (2) have baseline data available that demonstrate no preexisting differences on outcomes of interest. Descriptive studies are not included.

Outcomes: Eligible preliteracy and literacy outcomes include a full range of skills, including phonemic awareness, listening, vocabulary, speaking, pronunciation, print concepts, knowledge of the alphabet, reading (comprehension, fluency), sight reading of words, writing, spelling, and narrative development. Preliteracy and literacy outcomes must be assessed with standardized measures, country-specific or locally used assessments, or assessments developed for the evaluation (to the extent that they are not overaligned with the contents of the intervention). We will include secondary measures, such as school dropout and grade progression, as long as there also is a direct measure of children's literacy development.

II. Search Strategy

Relevant literature will be included if it was published in 2003 or later. Studies from more than 10 years ago have a high likelihood of assessing interventions that are no longer in use or are no longer being implemented in the same context (e.g., children's access to primary education, parental literacy, and the use of first-language instruction have all increased in many LMICs during the last decade).

Unpublished studies of eligible interventions, such as dissertations or research reports from government agencies and NGOs, will be included. Documents such as PowerPoint presentations, internal agency memos, editorials and notes, student term papers, advertisements or promotional materials, editorials, letters, case series, and personal communication notes will be eligible for the review if sufficient information is included. We will screen literature with abstracts published in English, Spanish, and French. If a study passes title and abstract screening but the main text is in another language, we will identify qualified reviewers literate in that language to review that study.

2a. Resources Searched

Studies included in this systematic review will be obtained from electronic academic literature, grey literature (i.e., unpublished reports), and key informant solicitation. We will

search online databases across diverse disciplines (see Table 1), work with our advisors and their networks to identify relevant literature, and examine reference sections for any other relevant work.

Table 1. Online Databases to Be Searched

Discipline	Resource(s)
Anthropology	Africa-Wide NiPAD; Anthropology Plus (OCLC)
Economics	EconLit
Education	Education Research Complete (EBSCO); Education Research Information Center (ERIC)
Interdisciplinary	Arts and Humanities Index; Web of Science; FRANCIS; Google Scholar
International relations	Public Affairs Information Service (PAIS)
Political science	Worldwide Political Science Abstracts
Psychology	PsycINFO
Religion	ATLA/ATLAS Religion Database; Religion and Philosophy Collection
Social sciences	Academic Search Premiere; Campbell Collaboration; Social Science Citation Index; Social Sciences Full Text (H. W. Wilson); Sociological Abstracts

Agency websites to be searched for grey literature include the United Nations, international development banks, and aid groups; NGOs and foundations; and international research institutes and centers of expertise. The project advisory panel also will be asked to use their professional networks to assist in the search for grey literature.

2b. Search Terms and Key Words

A list of search terms will be used to search electronic databases and agency websites and during informant solicitation (see Table 2). The search terms necessarily must be adapted for each database, although the concepts of the phases of human development (early and middle childhood), and home and community-based learning remain constant. We also will use a core set of search terms that were common to all databases, such as read* and lit*.

To obtain grey literature, publications, reports, documents, and archives of agency websites will be searched using the electronic database search terms. The vocabulary for each agency will vary based on its disciplinary affiliation and agency-specific language. Therefore, although some terms from the academic search will be relevant, new vocabulary may need to be inserted for the agency search. When searching publications, agency websites may or may not include the following search fields: title, keyword, ISBN, subjects, series, departments, publishing agencies, languages, year/release date, publication lists, region/country, and so forth. For agencies where reports are not accessed through an online search, the agency librarian or contact will be sent a request to assist in searching through agency publications.

Table 2. Search Strings

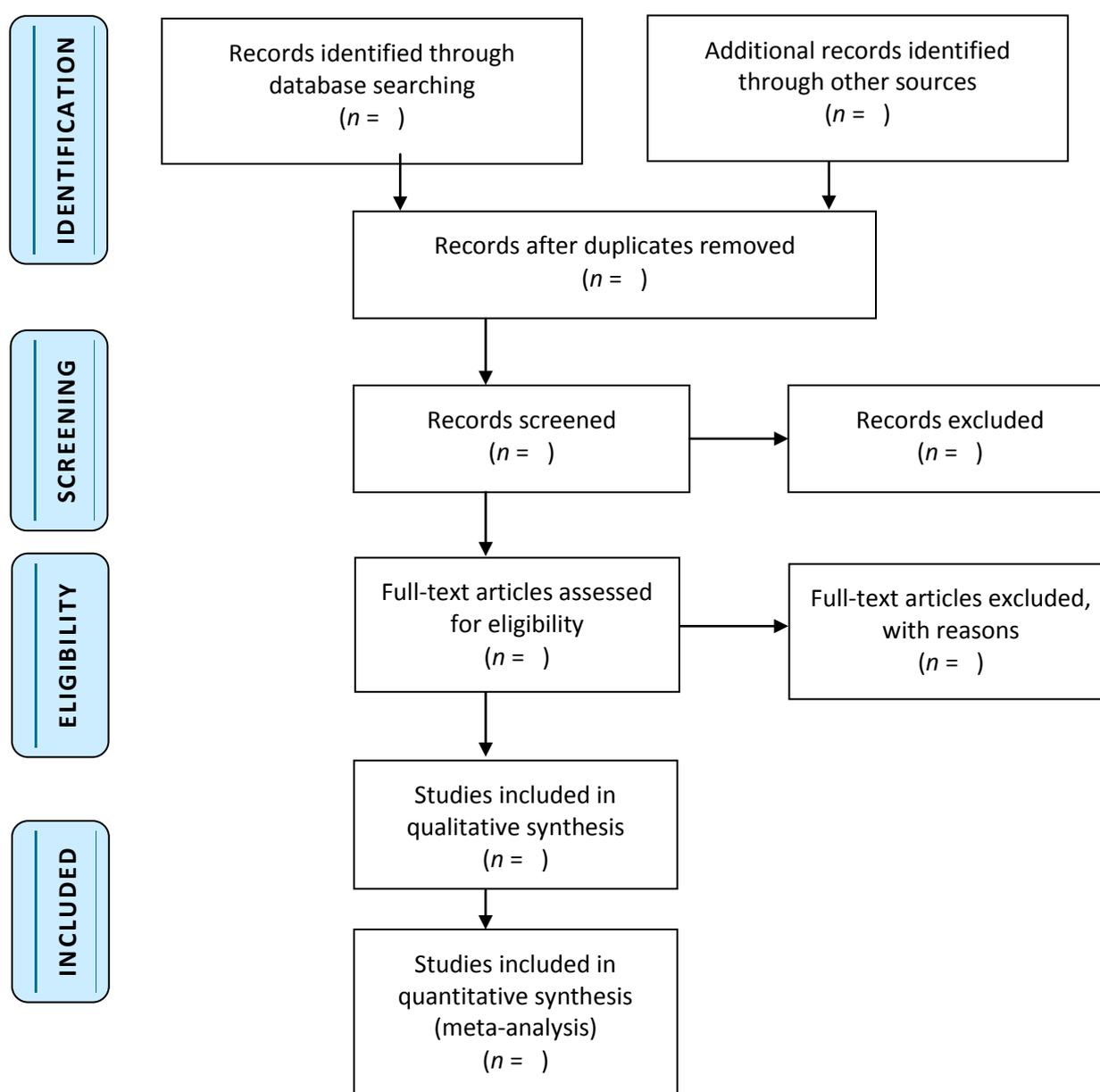
Search String	"child*" or "youth*" or "pre-reader*" or "low-readiness reader*" or "girl*" or "gender" or "boy"
AND	"READING achievement" OR "READING comprehension" OR "LITERACY education" OR "FAMILY literacy programs" OR "COMMUNITY education" OR "PARENT participation in children's reading" or "READING intervention" OR "LITERACY programs" or "read*" or "liter*"
AND	"assessment*" or "effect*" or "evaluat*" or "impact*" or "outcome*" or "interven*" or "program*" or "trial*" or "deliver*" or "service*"
AND	"family literacy" or "community involvement" or "community support" or "collaborative learning" or "facilitator*" or "learning resources" or "community centers" or "community organizations" or "community-based education" or "community-based" or "home-based" or "parent*" or "famil*" or "caregiv*" or "mother" or "father" or "sibling" or "center" or "centre" or "home*" or "communit*" or "librar*"
OR	"READING achievement" or "READING comprehension" or "alphabet" or "basic skills" or "coaching" or "cognitive skills" or "collaborative learning" or "comprehension" or "ECD program*" or "educat*" or "fluency" or "language" or "learn*" or "lexical" or "lexicon" or "linguistic" or "listening" or "narrative" or "morphem*" or "non-formal" or "informal" or "non-formal education" or "informal education" or "parental speech" or "phonem*" or "phonological" or "print" or "pronunciation" or "read*" or "sentence" or "sight words" or "spell*" or "stor*" or "storybook" or "syllable*" or "syntax" or "text" or "vocabulary" or "write" or "writing" or "written language" or "written text" or "word"
AND	"Afghanistan" or "Angola" or "Armenia" or "Asia Pacific Region" or "Bangladesh" or "Belize" or "Benin" or "Bhutan" or "Bolivia" or "Bosnia" or "Botswana" or "Brazil" or "Bulgaria" or "Burkina Faso" or "Burundi" or "Cambodia" or "Cameroon" or "Cape Verde" or "Caribbean" or "Central Africa" or "Central African Republic" or "Central America" or "Central Asia" or "Chad" or "Chile" or "China" or "Colombia" or "Comoros" or "Congo" or "Costa Rica" or "Côte d'Ivoire" or "Cuba" or "Developing countr*" or "Developing world" or "Djibouti" or "Dominica" or "Dominican Republic" or "East Africa" or "East Asia" or "Ecuador" or "Egypt" or "El Salvador" or "Eritrea" or "Ethiopia" or "Fiji" or "Francophone Africa" or "Gabon" or "Gambia" or "Gaza" or "Georgia" or "Ghana" or "Grenada" or "Guatemala" or "Guinea-Bissau" or "Guinea" or "Guyana" or "Haiti" or "Herzegovina" or "Himalayas" or "Honduras" or "Horn of Africa" or "India" or "Indonesia" or "Iran" or "Iraq" or "Jamaica" or "Jordan" or "Kazakhstan" or "Kenya" or "Kiribati" or "Korea" or "Kosovo" or "Kyrgyz" or "LAMIC" "Lao" or "Latin America" or "Latvia" or "Lebanon" or "Lesotho" or "Less developed countr*" or "Liberia" or "Libya" or "Lithuania" or "Low and middle income countr*" or "Low income countr*" or "Lusophone Africa" or "Macedonia" or "Madagascar" or "Malawi" or "Malaysia" or "Maldives" or "Mali" or "Marshall Islands" or "Mauritania" or "Mauritius" or "Mayotte" or "Mexico" or "Micronesia" or "Middle income countr*" or "Moldova" or "Mongolia" or "Montenegro" or "Morocco" or "Mozambique" or "Myanmar" or "Namibia" or "Nepal" or "Nicaragua" or "Niger" or "Nigeria" or "North Africa" or "Northeast Asia" or "Pakistan" or "Palau" or "Panama" or "Papua New Guinea" or "Paraguay" or "Peru" or "Philippines" or "Poor countr*" or "Poor region*" or "Romania" or "Russia" or "Russian Federation" or "Rwanda" or "Sahara" or "Sahel" or "Samoa" or "São Tomé and Príncipe" or "Senegal" or "Serbia" or "Seychelles" or "Sierra Leone" or "Solomon Islands" or "Somalia" or "South Africa" or "South America" or "South Asia" or "Southeast Asia" or "Southern Africa" or "Sri Lanka" or "St. Kitts and Nevis" or "St. Lucia" or "St. Vincent and the Grenadines" or "Sub-Saharan Africa" or "Sudan" or "Suriname" or "Swaziland" or "Syria" or "Syrian Arab Republic" or "Tajikistan" or "Tanzania" or "Thailand" or "Timor-Leste" or "Togo" or "Tonga" or "Tunisia" or "Turkey" or "Turkmenistan" or "Tuvalu" or "Uganda" or "Ukraine" or "Under-developed countr*" or "Uruguay" or "Uzbekistan" or "Vanuatu" or "Venezuela" or "Vietnam" or "West Africa" or "West Bank" or "Yemen" or "Zambia" or "Zimbabwe"

2c. Screening

The initial screening will use titles and abstracts to determine whether the study meets the defined inclusion criteria; then we will obtain the full-texts of all articles that pass initial screening. Given that multiple sources will be searched, the possibility of obtaining duplicate articles is very high. All duplicates will be removed, and all articles identified for review will be double coded to address possible selection issues. The completed coding forms will be reconciled; when there are cases of disagreement between the two reviewers, a third reviewer will be consulted to render a decision. Copies of the code books are available in the appendix.

The literature will be screened and selected based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, as illustrated in Figure 2 (Moher, Liberati, Tetzlaff, & Altman, 2009).

Figure 2. PRISMA Guidelines



2d. Information Management

Mendeley software will be used to manage the title and abstract library and store full-text documents. Coding will be completed using Microsoft Excel.

III. Methods Used in Primary Research

There is at least some rigorous research in LMICs that addresses the effects of interventions intended to improve children's preliteracy and literacy development through parents, families, or communities. The research conducted in this area falls into two general types. The first are studies of community-level interventions, primarily carried out under the auspices of large organizations (such as UNICEF). These studies cover LMICs. The second are smaller-scale studies of interventions delivered to individual children or families. The literature search is expected to yield more information about populations, interventions, and outcomes that have been studied in LMICs.

The following is information about two studies that are eligible for inclusion in this review. One study reported on a UNICEF initiative that facilitated the transition of young children into primary school (UNICEF, 2010). The evaluation consisted of multiple, country-level RCTs and is of interest because of its common evaluation framework and tools across diverse countries, and the fact that school-age children (community members) served as informal teachers to groups of preschool children to deliver the intervention. The aim of the intervention was to increase the school readiness of preschool children, including in the area of preliteracy. Although several countries are included in the study, not all countries implemented the trial with sufficient controls. Thus, only those countries where there is evidence of the use of randomization, and with information about group equivalence at the pretest, will be included.

Another study (Banerjee, Cole, Duflo, & Linden, 2007) measured the impacts of two remedial education interventions and compared their cost-effectiveness in the short and medium term and across the initial abilities of the students. The intervention of interest in this review hired young women in the community to teach basic literacy skills to children lagging behind in government schools. It included an intervention outside the formal school setting based in the community. Although the study itself examined a relevant intervention, the analysis strategy included the use of instrumental variables to adjust the differences among the treatment and control groups. This study may be included if the authors can provide the unadjusted treatment and control group means to calculate an effect size.

IV. Criteria for Determination of Independent Findings

If there are several reports of the same study, we will examine all but will treat the study as the unit of analysis. Because we anticipate that studies will report on a number of outcomes, we will conduct a meta-analysis on each outcome separately, with each study contributing only one effect size in each analysis. We may consider using robust standard errors (Hedges,

Tipton, & Johnson, 2010) for synthesizing the results of studies that include the same outcomes, but we do not anticipate obtaining enough studies to be able to use this technique.

V. Details of Study Coding Categories

We will code the studies based on the characteristics of the participants, the interventions, and the study design. Participant characteristics include country, age, and gender of the intended beneficiaries; native language schooling experience; and school level. Intervention characteristics include the focus of the intervention (e.g., language skills, print awareness), the characteristics of the intervention providers, the duration and the intensity of the intervention, the materials used, and setting. The research design will be coded, along with any potential sources of bias such as attrition, randomization problems, and preexisting differences between the experimental and control groups. We will not employ a research quality scale but will instead separately analyze RCTs and quasi-experimental studies. The major statistical analyses used in the study will be coded, as will measures of effect size from all relevant outcomes that are reported. These codes will be used, if possible, in an examination of moderators of effect size heterogeneity. The coding form is provided in the appendix.

VI. Statistical Procedures and Conventions

This review will include study designs ranging from RCTs to various types of quasi-experiments (excluding one-group pre-post studies). For most studies, we will use either a standardized mean difference or the log-odds ratio as the effect size, comparing outcomes between two independent groups. We will analyze the different types of effect sizes separately but not transform the effect sizes to the same metric. Some studies may employ more complex quasi-experimental designs, such as regression discontinuity or propensity score matching. We will not combine effect sizes from different study designs because they are not necessarily comparable. For example, we will not combine a standardized mean effect size computed from a study using covariate-adjusted means with a standardized mean effect size computed from unadjusted means. Effect sizes from clustered, randomized trials will be adjusted using approaches suggested by Hedges (2007) and Pigott (2011).

Where possible, we will combine the study results using meta-analysis. We will conduct analyses by outcome and intervention type, using separate analyses for such outcomes as direct measures of literacy versus successful grade progression. For example, we anticipate that several studies using a peer teaching model to increase school readiness skills will be included in the review. We will begin the analysis by examining similar outcomes from similar interventions. We will examine the heterogeneity of the effect sizes for each outcome within intervention types across studies using the I^2 index and the test of the variance component for a random effects model, and we will provide the 95 percent confidence interval for each effect. We will use sensitivity analyses to examine the impact of effect size outliers, reporting results when the outlier is included and when it is excluded. Because we anticipate a wide range of interventions implemented in a number of LMIC contexts, we will

use a random effects model, which more accurately reflects the heterogeneity we expect in our sample of studies.

We will use moderator analysis to explore heterogeneity if we have sufficient numbers of studies as indicated in the power guidelines by Hedges and Pigott (2004). If we are able to conduct moderator analyses, we will use our conceptual model as a guide, examining whether effect size heterogeneity is related to, for example, the characteristics of the participants, such as the age of children, income level of the community, and child disability status. If we are able to conduct moderator analyses, we will use a common measure of the random variance component because we anticipate finding small numbers of studies. All meta-analysis procedures will be weighted by the inverse of the variance of the effect size. We will use STATA or R software to conduct the meta-analysis and use the most recent techniques for computing effect sizes and synthesizing results.

Publication bias will be examined by using both funnel plots and Egger's test. We also will produce Forest plots for relevant analyses of effect sizes. Where appropriate, we will attempt to contact the authors to obtain missing data within studies. If we are not successful in obtaining important information after at least two contact attempts, we may need to drop the study from a particular analysis.

VII. Treatment of Qualitative Research

We are not explicitly searching the literature for any purely qualitative assessments of interventions. However, if eligible studies include qualitative evidence, we will examine these studies for insight into how interventions with quantitative outcomes have worked in a given setting.

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APPENDIX: CODE BOOK

SCREENING PAGE			
Study ID Number:			
Citation:			
Completed By:			
Reviewer Number:			
Study Information		Page	Guidance
Location: Country			
Location: City, Town, Province, etc.			
Does this study take place in a low- or middle-income country?			See WB LMIC tab for categorization
Intervention name			
Intervention type			
Does this study address pre literacy, literacy, or language development?			If this study addresses multiple areas (such as school readiness), check "yes" if there is at least one measure of intervention impact on literacy, pre-literacy or language.
Is this intervention delivered through families or community members?			Check "yes" if there is any involvement of families or community members (including peers). Check "no" if the intervention is delivered by school staff only. Also check "no" if the entire intervention being studied is the provision of formal preschool.
Are the beneficiaries children between the ages of 3 and 12, or pre-primary or primary school age?			Check "yes" if at least some participants are in these age ranges (e.g., ages 10 - 15 years, 2 - 4 years, etc.).
Does this study contain <u>any</u> measure of child outcomes in literacy, pre-literacy, language, or other related area?			These measures can be standardized assessments, academic tests, parent report, or measures developed for the study.

QUALITY OF EVIDENCE	
Group Formation	Page
<p>How was the intervention group formed?</p> <p>How was the control group formed?</p> <p>Does the control group appear to provide a valid comparison?</p> <p>If the control group does <u>not</u> appear to provide a valid comparison, or it is unclear if the comparison is valid, please describe the concern.</p>	
Independence	Page
<p>Who developed the intervention?</p> <p>Who implemented the intervention?</p> <p>Who evaluated the intervention?</p> <p>Does evaluation appear to be independent?</p>	
Outcomes	Page
<p>Is there at least one acceptable outcome measure?</p> <p>If yes, what areas of literacy, pre-literacy or language are assess specifically?</p> <p>Is there any concern about over-alignment of outcome measures with programming?</p>	
Attrition	Page
<p>Summarize information about sample attrition.</p> <p>Is there any concern about attrition?</p>	
Baseline Equivalence	Page
<p>Is there adequate information presented to assess baseline equivalence?</p> <p>Has baseline equivalence been established?</p> <p>If groups are non-equivalent, has this been addressed in analyses?</p>	

INTERVENTION	
Setting and Participants	Page
<p>Describe the study setting.</p> <p>Describe the intervention.</p> <p>Describe the control condition.</p> <p>Describe the participants in the intervention condition.</p> <p>Who is implementing the intervention? (Teachers, NGO staff, etc.)</p> <p>Who is delivering the intervention to the children? (Parent, community volunteer, older peer, etc.)</p> <p>Describe anything else that is relevant about the study setting or participants.</p>	
Resources	Page
<p>Describe the human resources needed to implement the intervention.</p> <p>Describe the material resources needed to implement the intervention.</p> <p>Describe any information presented about literacy/educational level among families and/or community members involved.</p> <p>Describe any special training required for implementing staff.</p> <p>Describe any special training required for implementing families or community members.</p> <p>Describe any oversight, management, or ongoing training provided (who provides, to whom, etc.).</p> <p>Describe anything else that is relevant about the resources required.</p>	

REVIEW AUTHORS

Lead Review Author: The lead author is the person who develops and coordinates the review team, discusses and assigns roles for individual members of the review team, liaises with the editorial base, and takes responsibility for the ongoing updates of the review.

Name:	Elizabeth Spier, Ph.D.
Title:	Principal Researcher
Affiliation:	American Institutes for Research
Address:	2800 Campus Drive
City, State, Province or County:	San Mateo, CA
Postal Code:	94403
Country:	United States
Phone:	(+01)650-843-8226
Mobile:	(+01)202-285-8380
E-mail:	espier@air.org

Coauthor(s):

Name:	Pia Britto, Ph.D.
Title:	Senior Advisor
Affiliation:	UNICEF
Address:	3 UN Plaza
City, State, Province or County:	New York, NY
Postal Code:	10017
Country:	United States
Phone:	(+01)212-303-7955
E-mail:	pbritto@unicef.org

Name:	Terri Pigott, Ph.D.
Title:	Associate Dean of Faculty and Professor of Research Methodology
Affiliation:	Loyola University
Address:	820 North Michigan Ave.
City, State, Province or County:	Chicago, IL
Postal Code:	60611
Country:	United States
Phone:	(+01)312-905-6245

E-mail: tpigott@luc.edu

Name: Eugene Roehlkepartain

Title: Vice President, Research and Development

Affiliation: Search Institute

Address: 615 First Ave. NE

City, State, Province or County: Minneapolis, MN

Postal Code: 55413

Country: United States

Phone: (+01)800-888-7828

E-mail: gener@search-institute.org

Name: Michael McCarthy

Title: Research Associate

Affiliation: Yale University

Address: 230 South Frontage Rd.

City, State, Province or County: New Haven, CT

Postal Code: 06520

Country: United States

Mobile: (+01)203-257-2062

E-mail: michael.mccarthy@yale.edu

Name: Yael Kidron, Ph.D.

Title: Senior Researcher

Affiliation: American Institutes for Research

Address: 2800 Campus Drive

City, State, Province or County: San Mateo, CA

Postal Code: 94403

Country: United States

Phone: (+01)650-843-8122

E-mail: ykidron@air.org

Name:	Janis Glover, MLS
Title:	Senior Reference Librarian
Affiliation:	Yale University
Address:	P.O. Box 208014
City, State, Province or County:	New Haven, CT
Postal Code:	06520
Country:	United States
Phone:	(+01)203-737-2962
E-mail:	Janis.glover@yale.edu

Name:	Daniel Wagner
Title:	Professor, UNESCO Chair in Learning and Literacy; Chair, International Literacy Institute and National Center on Adult Literacy; Head, Program in International Educational Development
Affiliation:	University of Pennsylvania
Address:	3700 Walnut St.
City, State, Province or County:	Philadelphia, PA
Postal Code:	19104
Country:	United States
Phone:	(+01)215-898-9803
E-mail:	wagner@literacy.upenn.edu

Name:	Julia Lane, Ph.D.
Title:	Managing Economist
Affiliation:	American Institutes for Research
Address:	1000 Thomas Jefferson Street NW
City, State, Province or County:	Washington, DC
Postal Code:	20007
Country:	United States
Phone:	(+01)202-403-5867
E-mail:	jlane@air.org

Name:	Mengli Song, Ph.D.
Title:	Principal Researcher
Affiliation:	American Institutes for Research
Address:	1000 Thomas Jefferson Street NW
City, State, Province or County:	Washington, DC
Postal Code:	20007
Country:	United States
Phone:	(+01)202-403-5267
E-mail:	msong@air.org

ROLES AND RESPONSIBILITIES

Our combined team brings substantial expertise in all areas required to complete this review with a high level of quality. The work is being led by AIR, in collaboration with the Search Institute and Yale University, as well as expert consultants.

The team will be led by Principal Investigator *Elizabeth Spier*, who has extensive experience in conducting international education evaluations. The team members include *Pia Britto*, an expert in child development and education; *Eugene Roehlkepartain*, an expert in parent, family, and community engagement to improve child outcomes; and *Terri Pigott* and *Yael Kidron*, experts in systematic review methods. *Janis Glover*, the Yale University senior reference librarian, has extensive expertise in information retrieval, and *Michael McCarthy* will assist her. *Daniel Wagner*, an expert in literacy in multiple international contexts, will serve as the senior advisor.

An advisory board, composed of academic researchers in developing countries, will provide input about literature and context and help with dissemination through their networks.

Quality assurance will be provided by *Julia Lane*, who brings a set of skills including statistics in the education context; AIR's professional editors; and *Mengli Song*, who contributed substantial methodological and statistical expertise to the What Works Clearinghouse.

In summary,

- Content: Elizabeth Spier, Pia Britto, Daniel Wagner, and Eugene Roehlkepartain
- Systematic review methods: Terri Pigott and Yael Kidron
- Statistical analysis: Terri Pigott and Mengli Song
- Information retrieval: Michael McCarthy and Janis Glover

SOURCES OF SUPPORT

This review is being conducted under the auspices of 3ie (International Initiative for Impact Evaluation) and is funded by a grant provided by USAID. AIR also is providing financial support to facilitate the completion of this work.

DECLARATIONS OF INTEREST

Some of the staff involved in this project have published research papers in the area of review. We have arranged for multiple reviewers from several organizations to take part in this work, ensuring that all areas of the review can be carried out by individuals and organizations with no conflict of interest (for example, relevant literature published through Yale University would be reviewed by personnel from other organizations).

PRELIMINARY TIME FRAME

The systematic review will be completed by June 30, 2014. Between June 30, 2014, and August 31, 2014, we will develop other work products to help disseminate the results from this review, such as a journal article, special topic papers, a PowerPoint presentation of the findings, and summaries of results that can be referenced in other publications.

PLANS FOR UPDATING THE REVIEW

Given the rapid increase in the use of rigorous evaluation in the field, it would be highly beneficial to update this review within the next few years. The authors of this review would be pleased to complete such an update should funding become available.

AUTHORS' RESPONSIBILITIES

By completing this form, you accept responsibility for preparing, maintaining and updating the review in accordance with Campbell Collaboration policy. The Campbell Collaboration will provide as much support as possible to assist with the preparation of the review.

A draft review must be submitted to the relevant Coordinating Group within two years of protocol publication. If drafts are not submitted before the agreed deadlines, or if we are unable to contact you for an extended period, the relevant Coordinating Group has the right to de-register the title or transfer the title to alternative authors. The Coordinating Group also has the right to de-register or transfer the title if it does not meet the standards of the Coordinating Group and/or the Campbell Collaboration.

You accept responsibility for maintaining the review in light of new evidence, comments and criticisms, and other developments, and updating the review at least once every five years,

or, if requested, transferring responsibility for maintaining the review to others as agreed with the Coordinating Group.

Publication in the Campbell Library

The support of the Coordinating Group in preparing your review is conditional upon your agreement to publish the protocol, finished review, and subsequent updates in the Campbell Library. The Campbell Collaboration places no restrictions on publication of the findings of a Campbell systematic review in a more abbreviated form as a journal article either before or after the publication of the monograph version in *Campbell Systematic Reviews*. Some journals, however, have restrictions that preclude publication of findings that have been, or will be, reported elsewhere and authors considering publication in such a journal should be aware of possible conflict with publication of the monograph version in *Campbell Systematic Reviews*. Publication in a journal after publication or in press status in *Campbell Systematic Reviews* should acknowledge the Campbell version and include a citation to it. Note that systematic reviews published in *Campbell Systematic Reviews* and co-registered with the Cochrane Collaboration may have additional requirements or restrictions for co-publication. Review authors accept responsibility for meeting any co-publication requirements.

I understand the commitment required to undertake a Campbell review, and agree to publish in the Campbell Library. Signed on behalf of the authors:



Form completed by: Elizabeth Spier, PhD

Date: 21 July, 2014