

THE ROLE OF FAMILY ON PATHWAYS TO ACQUIRING EARLY READING SKILLS IN LUSAKA'S LOW-INCOME COMMUNITIES

Tamara Chansa-Kabali
*University of Zambia,
Department of Psychology
Lusaka, Zambia*

Jari Westerholm
*Niilo Mäki Institute
Jyväskylä, Finland*

Abstract: *This paper reports findings from the study that examined the role of family in children's acquisition of early reading skills. We recruited 72 first-grade learners and their parents from low-income Zambian families for the study. In response to a home literacy questionnaire, parents reported on their reading attitudes and family literacy environment. Children's early reading skills were assessed using two early reading tests (orthographic awareness and decoding competence), both conducted at two different points during the year. Regression analyses of pretest and gain scores revealed that parental reading attitude and family literacy environment significantly predicted early reading skills. These findings suggest that the family is an important element in the children's process of learning to read. Implications of the findings are discussed.*

Keywords: *parental reading attitude, early reading skills, family literacy environment, low-income families, Zambia.*

INTRODUCTION

This study focused on the role of family in children's acquisition of early reading skills. Research indicates that the formal learning process of reading starts only when children enter the first grade (Reese & Gallimore, 2000). This is demonstrated in how the Latino parents in Reese and Gallimore's study conceptualized reading as something that is learned through repeated practice in formal schooling when children are 5 or 6 years of age. However, evidence demonstrates that this process starts long before the child enters school (Cunningham & Stanovich, 1993; Leseman & de Jong, 1998; Storch & Whitehurst, 2001; van Steensel, 2006; Weigel, Martin, & Bennett, 2006; Whitehurst & Lonigan, 1998; 2001). Several researchers have illustrated how family factors play a key role in the acquisition of reading skills in young children. Apart from being the earliest environment in which children gain access to written material, the family provides children with initial socialization into the literate world (Dickinson

& Tabors, 2001; Snow, Burns, & Griffin, 1998; Sulzby & Teale, 1991; Teale, 1978). Although the home literacy environment has been defined using broader socioeconomic conditions, research indicates that parent–child interactions affect the transfer of skills from parents to children as they socialize within their families (McBride-Chang, Chow, & Tong, 2010). Consequently, the number of interactions, their effectiveness, and the efficiency of the skill transfer are dependent on the parents’ knowledge, attitudes, expectations, and availability.

In the formal process of learning to read, decoding is a paramount skill. Despite its importance, most first graders in Zambia do not achieve the mastery of reading skills by the end of that year, and similar challenges have been recorded for pupils in upper primary classes (Hungu et al., 2010). In the search for a comprehensive understanding of reading acquisition, researchers have attributed both family and school factors as key contributors to the success rates of the mastery of reading skills among children (Calfee, 1997; Howie, 2010; Serpell, Baker, & Sonnenschen, 2005). However, these contexts (school and home) are not without challenges. In schools, challenges include poorly resourced infrastructures, inadequate reading materials, large class sizes, and low teacher motivation. In the family, the lack of children’s books and parents’ level of education, employment status, and reading attitudes can compromise reading attainment. Children experiencing both limited literacy interactions at home and under-resourced learning environments in schools are likely to be profoundly challenged in their learning-to-read process. Since the family is an important context for human development, the aim of this study was focused on the role of family in the reading development of first-grade children in relatively low-income communities in Zambia.

Bronfenbrenner’s (1979) ecological theory of human development was employed in this study through an exploration of children’s early environments: the home (microsystem) and the school (mesosystem). This theory addresses a totality of aspects that children experience in these environments. According to Bronfenbrenner and Morris (1998), individual life experiences, not only in childhood, are a function of who we are, what we anticipate to be, what we do and anticipate doing, and with whom we interact, have interacted, and anticipate interacting. Process, person, context, and time are interacting elements in the environment that facilitate development. *Process* encompasses forms of interaction between the individual and the environment (objects and symbols), called proximal processes. These processes operate over time and are posited as the primary mechanisms to advance human development. Nevertheless, the power of such processes to influence development varies substantially as a function of the characteristics of the developing *person*, of the immediate and remote environmental *contexts*, and of the *time* periods in which the proximal processes take place (Bronfenbrenner & Morris, 1998). These experiences underscore the interrelatedness of people and their physical, emotional, and cognitive behaviors as they occur in relation to specific environmental contexts. Embedding the study in this framework signifies the important connection and interrelatedness between the child and his/her social environment and the interaction between them. These aspects, taken together, produce both constancy and change in the characteristics of the person over his/her life course. As a context that hosts factors that support reading development, this study explored the home environment. In addition, because reading is a mechanism through which children come to understand their environments, this study aims at identifying family factors that affect children’s orthographic awareness and decoding competence, which are skills pertinent to reading development. To achieve this aim, the study was guided by the question, “What family factors significantly explain variation in children’s early reading skills?”

METHODOLOGY

This research utilized a mixed method (quantitative and qualitative) design in exploring the home environment to envisage an understanding of factors important to children's reading acquisition in Zambia. The weight of the design was mainly on the quantitative methods, with the qualitative paradigm offering a supportive role (Creswell, 2009).

This study was part of the larger project called Reading Support for Zambian Children (RESUZ) and was conducted in Lusaka, Zambia's capital city. The city has a population of slightly over two million with an average household size of 5.2 people (Central Statistics Office, 2010). Important to note is that many families host extended family members that increase the household size. Zambia's educational system is divided into primary (Grades 1–7), secondary (Grades 8–12), and tertiary levels. Children throughout the country begin their education at age 7, most often taught in one of seven local languages from Grade 1 through Grade 4, with English introduced as a subject in Grade 2 and used as the language of instruction from Grade 5 onwards (Use of Local Languages, 2013). In Lusaka, the local language is called ciNyanja.

Subjects

Child participants comprised 72 learners who were randomly selected from nine schools in Lusaka. The parent participants, which at times included aunts or grandparents who provided primary care to the child, were recruited automatically in connection with their child's inclusion in the study. These parents were aged between 25 and 61 years old ($M = 35.67$, $SD = 6.65$). The study was designed in a way that the sample of parents would represent at least 10% of the total number of child participants of the RESUZ project, and this was achieved. Initially, we selected 80 parents whose children are in nine out of 42 schools that participate in the RESUZ project. Although random sampling was conducted for school selection in the overall project, purposive sampling was desired for this study because the goal was to reach children in diverse communities. From the 80 parents who were contacted, 72 reported to be available and were recruited as participants for the study. Typically, each of the 72 children represented one family. There were no cases of more than one child in a classroom representing a family or parent. Although both parents were aware of the study, only the available parent, typically mother, consented to participate in the study at the time of data collection. This consent was given orally or in written form. It is important to note here that the typical respondents to the questionnaire were mothers because they were easily accessible and available. In addition, mothers were more likely participants because a substantial number of families were single-parent (mother) households. In the very few cases where both parents were available, fathers preferred that the mothers respond because the mothers were with the child most of the time.

Consent for children's participation in the study was done through the schools. First, the research received approval from the Zambian Ministry of Education and, before research commenced, ethical clearance was received from the University of Zambia Ethics Committee as approval of the research. Using the inclusion criteria supplied by the researchers, teachers were able to identify in their classrooms the children who were eligible to participate in the study. After random selection, children who were above the stipulated age of 9 years or presented health problems were excluded. Parents were informed that their child was recruited for the study, and none of the 72 parents objected or withdrew their child from

participation. The sample of learners for this study comprised 32 boys (45%) and 40 girls (55%), with a mean age of 7.15 years ($SD = .62$).

Descriptive results on the characteristics of the families obtained from the Home Literacy Questionnaire revealed that all families were from the low-income bracket as assessed by parental education and occupation. From these results, 85% of the mothers and 57% of the fathers had attained no more than 9 years of education. In terms of employment, 40% of the mothers were stay-at-home mothers; 60% were engaged in income-generating activities, often in the service industry (e.g., maids, cooks, waiters). Of the fathers, 72% were engaged in income-generating activities in the service industry (e.g., janitors, bus conductors, shopkeepers, fuel attendants), administration (e.g., office clerks), or the trades (e.g., electricians, welders, carpenters, construction workers). The marital statuses of the parents in the study are recorded as follows: married and living together, 69.4%; single, 11.1%; divorced, 8.3%; and widowed, 11.1%.

Measures for Reading Skills

Two measures were employed to assess the children's reading skills. All procedures in the assessments of these measures were conducted in ciNyanja, the language of reading instruction and one of the seven local languages approved by the Ministry of Education for use in Zambian schools. The instructions for assessment, as well as the measures, were translated from English to ciNyanja by a specialist from the Ministry of Education's Curriculum Development ciNyanja the RESUZ team. This process included back-and-forth translation of the materials from English to ciNyanja and from ciNyanja to English until consensus was achieved. All children reported familiarity with ciNyanja and there was no record of any child who did not understand the language.

The Orthographic Awareness Test was developed in 2010 by the RESUZ research team, based on pilot work with Zambian children led by Ojanen (2007). Test items comprise letters, syllables, and simple words in the ciNyanja writing system, as well as non-ciNyanja letters, syllables, and words, which served as distractors. This measure served as a letter, syllable, and word recognition test. Children were asked to choose items that would help them to read. It was entirely up to the child to choose these letters, syllables and words in the presence of distracting, nonconventional letters and characters. This test achieved a moderate test-retest reliability, $r = .67$ ($N = 22$).

The Decoding Competence Test was developed originally by Ojanen's research team based on their aforementioned pilot work and modified in 2010 by the RESUZ research team. The test comprised letter-sounds, syllables, and simple words in the ciNyanja writing system. Children were asked to match the sound that they heard to the corresponding letter, syllable, or word that was on the paper. The purpose of the test was to measure the child's ability in spelling. This test showed a high test-retest reliability, $r = .86$ ($N = 22$).

Measures for the Family Literacy Environment

A structured questionnaire was used to quantitatively assess the family and reading environments of this study. Specifically, the questionnaire explored aspects of parent academic achievement, family economic condition, literacy activities, and the availability of reading materials. The parental reading attitude (PRA) of the 72 mothers (or adult caregiver) was assessed through the Home Literacy Questionnaire (HLQ), with some items adopted from the Progress in International

Reading Literacy Studies (PIRLS) Questionnaire (Mullis, Martin, Kennedy, & Foy, 2007). The PIRLS PRA measure had seven items, measured on a 5-point Likert scale, with a reliability of .81. The PRA measure in this study comprised 10 items, similarly measured on a 5-point Likert scale and reported a high internal consistency, $\alpha = .94$ ($N = 72$). Parents indicated how much they agreed with the statements. The scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*), with reverse coding applied to negative statements. Lower scores indicate less favorable reading attitudes. The individual scores from each parent's responses to the 10 items were added together to create that parent's aggregate score for the index. The measure included statements such as "I spend my spare time reading," "I talk about what I read," and reverse-coded negative statements such as "I find reading boring," "I find reading difficult," and "I read only when I have to."

The same HLQ was used to assess socioeconomic (SES) aspects of the family literacy environment (FLE), inquiring about parental education and occupation, family possessions, reading materials, and literacy activities. Parents indicated their highest completed education level from the following scale: 1 (no formal schooling), 2 (primary), 3 (junior secondary), 4 (senior secondary), and 5 (college or higher). Occupation was on a scale representing 1 (no occupation), 2 (nonskilled), 3 (semiskilled), 4 (skilled), and 5 (professional).

Additionally, the HLQ measured the frequency or presence of several specific items within the household. To assess family possessions, parents indicated whether their household had a television, electricity, running water, a flushable toilet, a stove, or a car. Parents also were queried about the quantities of specific types of reading materials (e.g., children's books) that the family possessed. Finally, the literacy measures encompassed presence and frequency of exposure to print, oral language, and reading and writing activities. The frequencies of components in the household environment were on an ordinal scale and measured on a four- (1 = *once a month* to 4 = *daily*) or five-point (1 = *not at all* to 5 = *daily*) Likert scale. Items on this measure reported a high internal consistency, $\alpha = .91$ ($N = 72$). The 4-point Likert scale was preceded by a Yes or No question; the 5-point scale was a stand-alone question. In essence, the 4-point scale was treated as a 5-point scale with the addition of the preceded Yes or No question. In the composition of the family literacy environment composite score for each family, global constructs of the family environment were identified (i.e., parental education, occupation, and possessions formed the SES measure; presence of reading materials data formed the Reading Materials measure; and literacy activities formed the Family Literacy Activities measure). The use of the global constructs was desired for gathering items that belonged together within one construct. Then these constructs were correlated in order to determine their association before they were aggregated to form one measure—the Family Literacy Environment. Correlations revealed that the global constructs strongly correlated with each other (SES with Literacy Activities and Reading Materials, $r = .64$ and $r = .52$, respectively; Reading Materials with Literacy Activities, $r = .46$), all significant to $p < .001$.

To further explore the families' everyday experiences with literacy, qualitative research was employed. Semistructured interviews were conducted with only those parents ($n = 12$; all mothers) whose children had ceiling or floor baseline scores on the reading tests. Questions that guided the interview were related to daily family routines, with the purpose of examining differences that exist in the children's literacy experiences. The decision to include the qualitative paradigm was motivated by three key desires: (a) to increase validation of our conceptualizing the home literacy environment, (b) to understand more fully the daily literacy routines of high- and low-achieving child readers, and (c) to facilitate discussing the quantitative findings. All data were coded by the

first author and a postgraduate trainee, and reported a 90% inter-rater agreement. In all cases of disagreement, consensus was reached after re-examining the original data.

Testing Procedure

The team that assessed reading skills comprised the RESUZ project leaders (doctoral students) and 12 undergraduate psychology- and education-major students as research assistants. The research assistants were trained over a 3-day period that included a pilot testing of the measures in a comparable school. We assessed the children's reading skills by testing orthographic awareness and decoding competence. These tests were conducted individually with each child at his/her school and the testing time was typically 20 to 30 minutes. The children's reading assessments were conducted on two occasions: The pretest (Time I) in the second term, followed by the posttest (Time II) in the third term of the same school year, with an intervention between the collection times. This intervention involved children playing a literacy game (GraphoGame¹), developed in Finland, for learning letter-sound correspondences.

For the Orthographic Awareness Test, the child was introduced to the session that they were going to talk about learning to read. This reading was centered at the child recognizing the conventional and nonconventional, letters, syllables and words. With the assistance of the assessor, the child worked through two sets of sample items for each stage (Stage 1-letters, Stage 2-syllables, and Stage 3-words) to identify the correct and incorrect letters, syllables and words when learning to read. The child then independently completed a 3-minute session of the actual test without assistance. The child was asked to underline the correct responses, and was awarded one point for every correct response and minus one for incorrect responses. The test had an objective scoring system ranging from -54 to 54.

The Decoding Competence Test was administered without a time limit. After two sample items, the assessor dictated 20 items, which included 5 letters, 5 syllables, and 10 words. This process was done one by one, repeating each item three times, more if the child requested. The child was presented with four options and was required to underline the letter, syllable, or word that corresponded with the spoken item. The test scoring ranged from 0-20, with the child receiving 1 point for every correct response and nothing for incorrect responses.

For the home environment assessment, home visits were scheduled with each parent, with the help of the child's teacher. The first author of this paper and four of the RESUZ-trained research assistants participated in the data collection. The research assistants were trained by the first author on collecting data with families. Administration of the questionnaire in which the PRA and the FLE data were collected lasted 35 to 45 minutes. The questionnaire was structured and the assessors followed an interview process in which the assessor read aloud the statements and recorded the responses. These interviews were conducted in the parents' preferred language. The language preference was determined at the time the assessors called each parent to introduce the research, confirm the parent's willingness to participate, and obtain the schedules and directions for the home visit. This was done so that if the assessor's competence in the parent's language was not good, then another assessor, competent in that language, would collect the data instead. We had no cases in which the assessor was not competent in the preferred language. Although the language was determined during the phone conversations, the competent use of a language on the parent's part was addressed before the

interview was undertaken. The language of use was primarily ciNyanja, but frequently was characterized by code-switching between English and ciNyanja throughout the interview.

Further, a qualitative exploration of the day-to-day experiences with literacy was scheduled with a few parents. This selection was based on children's pretest results on both the reading measures. These in-depth interviews were scheduled and conducted separately from and after the HLQ administration. These interviews were conducted by the first author of this paper and typically lasted from 45 to 90 minutes. Similarly, the language of use for the in-depth interviews was predominantly ciNyanja, with only one case of iciBemba. IciBemba is the language of reading instruction in the Northern Province of Zambia. The interviewer was competent in iciBemba and the code switching was between iciBemba and English for both the interviewer and interviewee. The 14-question interview explored the children's typical day, parental educational goals, and literacy experiences of the family and children. These foundational questions often resulted in follow-up probes to clarify and obtain further information on particular and/or interesting aspects relevant to the study.

DATA ANALYSIS

Statistical analyses were computed using the Statistical Package for the Social Sciences software (SPSS 19.0). To show associations among the variables, Spearman's Nonparametric Correlation Test was used for all the variables. The correlations were basically employed to determine the associations of the variables forming the predictor indices (PRA and FLE). This was necessary to establish their shared variance in the aggregated index. Similarly, associations between the predictors and outcome variables were performed in the correlation analyses. In addition, hierarchical regression analysis was employed to examine the influence of family variables.

Data from the qualitative inquiry were first transcribed by the first author of this paper in the language(s) in which the interviews were conducted and were later translated to English. Codes for identification were given to the children, and the parents were also identified by the child's code with an addition of *p* to indicate the parent's data. These codes identified the child by sex, school, classroom, and a unique number. To this code, LA (low achieving) or HA (high achieving) were added. Although names were used in the actual interview, these were replaced in the transcriptions: For example, instead of the child's name, the phrase *your child* was used to uphold the anonymity that was guaranteed in the beginning of the interview. The analysis of this inquiry followed the pattern of thematic analysis. Themes were derived from the maternal narratives regarding daily routines that were then categorized into broader themes that reflected the literacy experiences in the families. For each interview, the recurrent themes, concepts, or activities mentioned by the mothers of the high and low achievers were identified. The qualitative data offers support for discussing quantitative findings. As such, the analysis presents only important highlights from the interviews.

For all of the data and their analyses, the focus was on the effect of family variables on pretest and posttest results (i.e., gain scores, obtained by subtracting the baseline pretest scores from the post test scores). It must be noted here that hierarchical regression analyses for the gain presents a reduced sample size of 58 child participants. The reduced sample size was necessitated by the children's absenteeism at the time when post tests were administered.

Analyses of other data (i.e., the role of the intervention in children's reading gains, or the nature of the learning skills explicitly) are outside the scope of this paper.

Bivariate Correlations

Data for the predictors were ordinal in nature and, as such, the Spearman Rho's Nonparametric Test for correlations was appropriate. After computing the bivariate associations among the predictor and outcome variables, results revealed significant correlations, $p < .01$. Table 1 presents the descriptive statistics and bivariate correlations.

Regression Analyses

Hierarchical regression analyses were computed to determine the impact of family variables on the reading skills baseline and gain scores. The variables were entered into the regression, starting with PRA and then the FLE index. Due to some biases associated with strong correlations among predictors (Field, 2013), the multicollinearity of the two variables of the home data was explicitly examined. Based on the Variance Inflation Factor (VIF) the assumption of multicollinearity was not violated. However, these home variables are correlated in moderation, thus showing some shared variance.

Results for the pretest in Table 2 showed that when PRA was put in the analyses as the only predictor, it significantly explained 40% variance, $F(2, 69) = 48.80, p < .001$. In Model 2, the FLE was added, and it significantly explained 12%, $F(2, 69) = 16.88, p < .001$. For the gain scores, PRA alone significantly explained 17% of the variation, $F(2, 58) = 12.80, p < .001$ while adding FLE in the second model resulted in explaining a significant effect of 6%, $F(2, 58) = 4.48, p < .05$.

Table 1. Summary of Intercorrelations, Means (M), and Standard Deviations (SD) of the Variables.

	1	2	3	4	5	6
Predictors						
1. Parental Reading Attitude	1					
2. Family Literacy Environment	.34**	1				
Reading Outcomes						
3. Orthographic Awareness Pretest	.61***	.54***	1			
4. Decoding Competence Pretest	.65***	.60***	.36**	1		
5. Orthographic Awareness Gain	.48**	.40**	.25*	.40**	1	
6. Decoding Competence Gain	.34**	.40**	.36**	.28*	.37**	1
M	28.65	63.07	16.80	8.36	3.71	2.70
SD	12.59	27.92	7.43	3.53	6.70	5.13

Note. * $p < .05$; ** $p < .01$, *** $p < .001$.

Pretest results for decoding competence presented in Table 3 show that PRA significantly explained 32% of the variation, $F(2, 69) = 34.70, p < .001$, and when FLE was added, it additionally explained 11%, $F(2, 69) = 13.75, p < .001$. For the gain scores, PRA significantly explained 9%, $F(2, 58) = 6.90, p < .01$; with the FLE data added, there was a significant effect of 8%, $F(2, 58) = 5.79, p < .05$.

Thematic Analysis

One concept that emerged quite significantly from the analysis of parental narratives was that parents were more concerned with education as catalyst for enhancing their children's lifestyle regardless of the child's performance (low or high achieving). As such, all academic activities were encouraged, fostered, and supported in the home. Parents perceive formal education as the channel through which their children can alter their future living conditions for the better. Successful completion of formal education allows for a better lifestyle for the child and his/her family. With this conceptualization, reading activities were encouraged and fostered because reading was seen as the foundational skill for school success. This is clearly evident in this extract from a parental narrative, in response to the question, "Why do you encourage your child to read?"

Often my daughter asks me, "Mommy, why can we not shift [move] and go to live in a nice house? This house is not nice." So I tell her that, "When you go to school and complete your studies, we will move. You, yourself, will make us shift from here to go to a better house." I tell her that, "You cannot be able to complete your studies if you cannot read. So you need to know how to read for you to complete your studies, and then you will make us shift to a better house." (Parent of a female high-achieving learner)

Therefore, the approach to learning to read from this perspective seems to produce a chain reaction that not only helps in other studies but also improves the lifestyle of the household after completion. Thus, the key motivator for the parents in encouraging their children to read appears to be economic in nature. Although all parents were inclined to mention the economic benefits of education, mothers of the high-achieving learners were seen to involve their children in extra literacy-enhancing activities. These parents encouraged their children to attend to school work even in the absence of teacher-mediated homework. Hence, the parents of high-achieving learners reported additional literacy experiences in the absence of classroom homework. These mothers also reported encouraging their children to participate in reciting poems, memorizing Bible verses, and retelling stories learned from television. Specifically, one parent mentioned that she would pretend not to understand a film showing on the television and ask the child to retell it to her. A couple of parents of the high achievers indicated that they pretend to their children that they do not know things because they are not educated; they tell their child that they depend on the education of the child to help them learn. With this motivation, children shared what they learned from school with their parents. Other aspects of differences between low and high achievers were that the high achievers possessed more reading-enhancing materials than the ordinary books (e.g., alphabet books and charts). Similarly, the parents of high achieving students seemed to explicitly know how to engage in literacy-enhancing activities at home. Mothers of high-achieving learners took their children's literacy learning, in part, as a responsibility of the family. For them, school is seen as a driving force that needed the support of the family.

Table 2. Hierarchical Regression Analyses of Family Variables Predicting Orthographic Awareness at Time I and Time II.

Variables	Time I (Pretest), N = 72							Time II (Gain Scores), N = 58						
	<i>b</i>	<i>SE b</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>b</i>	<i>SE b</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>
Model 1				.64	.41	.40	48.80***				.42	.18	.17	12.8***
Constant	5.98	1.69						-2.81	1.99					
Parental Reading Attitude	.38	.05	.64***					.22	.06	.42***				
Model 2				.73	.53	.12	16.88***				.49	.24	.06	4.48*
Constant	2.07	1.80						-5.44	2.30					
Parental Reading Attitude	.30	.05	.51***					.17	.06	.33**				
Family Literacy Environment	.10	.02	.36***					.06	.03	.26*				

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. β is the standardized regression coefficient, *b* is the unstandardized regression coefficient, and *SE b* represents the standard error of the unstandardized regression coefficient. The adjust R^2 was used as the appropriate proportion because it takes into account the sample size.

Table 3. Hierarchical Regression Analyses of Family Variables Predicting Decoding Competence at Time I and Time II.

Variables	Time I (Pretest), N = 72							Time II (Gain Scores), N = 58						
	<i>b</i>	<i>SE b</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>b</i>	<i>SE b</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>
Model 1				.58	.33	.32	34.70***				.33	.11	.09	6.90**
Constant	3.72	.86						-1.14	1.59					
Parental Reading Attitude	.16	.03	.58***					.13	.05	.33***				
Model 2				.66	.44	.11	13.75***				.43	.19	.08	5.79*
Constant	1.90	.93						-3.50	1.82					
Parental Reading Attitude	.13	.03	.45***					.09	.05	.22*				
Family Literacy Environment	.04	.01	.36***					.06	.02	.31**				

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. β is the standardized regression coefficient, *b* is the unstandardized regression coefficient, and *SE b* represents the standard error of the unstandardized regression coefficient. The adjust R^2 was used as the appropriate proportion because it takes into account the sample size.

DISCUSSION

This study examined the role of the family in the acquisition of early reading skills. Although interactive processes within the home have been found to facilitate reading acquisition (Arnold, Zeljo, Doctoroff, & Oritiz, 2008; Baker, 2003; Bennett, Weigel, & Martin, 2002; Bus, van IJzendoorn, & Pellegrini, 1995; Sénéchal, 2006; Sénéchal & LeFevre, 2002; Sénéchal, LeFevre, Thomas, & Darley, 1998; Serpell, Sonnenschen, Baker, & Ganapathy, 2002; Storch & Whitehurst, 2001), such processes differ from home to home. This study highlights the experiences of acquiring or encouraging learning in low-income families in a developing nation, a reality that needs consideration when assessing the influence of family on reading development. This paper reports findings from an exploration of two constructs in the home environment: the PRA and the FLE.

A significant observation from the current study is that family variables explain substantial variation in the reading outcomes at both pretest and posttest scores. However, these variables are less influential in explaining the gain scores. Data show that family variables explain a total of 53% at pretest on orthographic awareness but that decreases to 24% on gain scores. A similar pattern is shown on decoding competence, where the variables explain 44% at Time I but that declines to 19% at Time II. These findings are similar to those of Storch and Whitehurst (2001), who reported a large impact of the home environment on children's reading development. The impact seems to be higher at the beginning but decreases when children become fully immersed in school activities. In the same vein, Sénéchal (2006) reported that home literacy variables only indirectly affected the reading comprehension of third graders. The results of this study confirm that a literate home environment is a strong antecedent for the acquisition of reading skills.

When PRA was assessed, findings in this study confirm that the parents' attitudes are a major component in the home environment, explaining variation on reading outcomes. Despite the low-literacy levels among the parents, the qualitative inquiry revealed that over 60% of the parents provided children with reading opportunities. This finding mirrored the findings that are reflected in the quantitative results, in the articulated differences in how these parents provide and support literacy experiences in the home. However, these opportunities and resources were most often tied to the external benefits that the child would receive after completion of formal education. As such, the belief that formal education would improve the lives of the children enabled the parents to make an effort toward providing literacy artifacts within the home. Apart from buying books, some parents whose children were high achievers reported buying charts with the alphabet because they believed the charts facilitated literacy learning through the visual connection of what the child was seeing and hearing. This is in line with the findings by Juel, Griffith, and Gough (1986), who demonstrated that improvement in visual word recognition from first to second grade was associated with corresponding growth in spelling ability. Although the parents may not be aware of the strong scientific connections between what they are offering the children and the outcome, these parental behaviors need to be encouraged.

In addition, parents encouraged their children to retell the stories after watching television, an activity that can be said to influence oral language (Castro, Lubker, Byrant, & Skinner, 2002; Dickinson & Tabors, 2001; Isbell, Sobol, Lindauer, & Lowrance, 2004; Schneider, 1996). The differences in the way the children experienced literacy in their families can be explained as a consequence of parental attitudes, and this could be noted from the way the

parents facilitated the organization and structuring of the physical and social contexts (DeBaryshe, 1995; Reese & Gallimore, 2000). As a socially mediated process, reading within the home is affected by the propensity of the parents towards it. It can be argued that parents who possessed a more positive attitude toward reading invested a little more in reading materials, as well as encouraged reading activities in the family and community. Support for this claim is revealed from the thematic analysis of maternal narratives, where some parents encouraged their children to act as young teachers to other children within their communities. In some cases, the parents asked the children to teach them.

This finding echoes other research illustrating the significance of the PRA in school achievement (DeBaryshe, 1995; Lynch, Anderson, Anderson, & Shapiro, 2006; Reese & Gallimore, 2000; Sonnenschein, Brody, & Munsterman, 1996). In identifying aspects of the home environment that relate to literacy acquisition, Baker, Sonnenschein, Serpell, Fernandez-Fein, and Scher (1994) revealed 10 factors that influence the reading development of children, among which is the PRA. It can be argued therefore that, despite lower levels of reading experience, education, and occupation, parents still influence the reading development of their children through their own reading experiences and attitudes. This finding is in line with some of the studies that have been conducted in South Africa and other countries, such as Taiwan, on the role that PRA plays in the acquisition of reading over and above the language used or parental education and employment (Chen & Ko, 2009; Howie, 2010). However, this finding also contrasts with studies from industrialized countries, where contextual factors sharply explain variability. Most parents in industrialized countries, having attained higher levels of education, tend to possess positive attitudes towards reading, thereby accounting for the PRA's lower significance on child reading acquisition (see Howie, 2010). In South Africa, Howie's (2010) study that investigated more than 16,000 children found that PRA emerged as the strongest predictor. This illustrates that parents with more positive attitudes toward reading create learning environments for their children that are supportive toward the acquisition of reading skills.

The second, broader construct that the paper reports is the FLE. This research began with the presumption that families that scored higher on this measure would have children performing better on reading outcomes. The results confirm this assumption. Analyses revealed significant positive effect on pretest and gain scores: FLE accounted for 12% variance at pretest and 6% for gain scores on orthographic awareness and 11% at pretest and 8% for gain scores on decoding competence. An explanation for this finding is related to the family's differential involvement in literacy activities. Families differed significantly in how they engaged with their children's reading work. Maternal narratives revealed that, although most parents' engagement with reading work was initiated by the school through homework, some parents assigned literacy work to their children in the absence of school-mediated assignments.

This finding is in line with Sénéchal et al. (1998), whose home literacy model emphasized parental involvement as key to helping children attain reading skills. They differentiated two aspects of the home environment: the shared book experiences, which afforded children's enhanced vocabulary, and direct parental teaching, related to specific reading skills, such as decoding and print awareness. Sénéchal and colleagues (1998) identified shared book reading as key to vocabulary development. Other studies have revealed that common activities, such as playing games and singing songs, were keys to enhancing oral language and undisputedly enhance early reading (see also, Bradley & Bryant, 1983; Cunningham & Stanovich, 1993; Dickinson & Tabors, 2001; Hammer & Maccio, 2006; Snow, 1991). Interpretation of the

current findings underscores the expectation that reading-enhancing experiences are part of the children's lives in their families.

It must be acknowledged that we expected the FLE would account for more variation on the reading outcomes than it did because some literacy activities directly teach reading skills. However, this measure contained multiple variables captured in the family environment, and when these environmental factors were analyzed separately, the results did not yield significant effects on the reading outcomes. Therefore, this reality could have offset the impact that literacy activities have on the reading outcomes. In other words, by separating the various environmental factors that had previously been subsumed with one overarching term into either the PRA or the FLE for this study, the FLE showed a lower direct impact on the children's test scores at Times I and II.

Finally, this study brings out an important finding for Zambian families that is in line with other studies of the important role that family plays in supporting children's reading skills despite the context (Aram & Levin, 2002; Cairney, 1997; Delgado-Gaitan, 1987; Phillips, 2010; Purcell-Gates, 1995). Thus, the findings of this study help point toward an important aspect of intervention within the home that supports the interventions within the schools for the advancement of reading skills in low-income children.

CONCLUSIONS

This study confirms that family influences the overall development of the child in addition to his/her educational attainment, of which reading is the foundational skill. The findings highlight the role of the family in a child's learning process in Zambia. The first implication of these findings is that families should be incorporated more explicitly within the educational agenda of the children. This can be achieved through raising awareness of the significant contribution the family can make in the learning process. Second, family involvement in a child's learning process should go beyond the physical provisions of uniforms, books, and food. This could be done by actively promoting a learning environment at home, such as creating space and time for reading and providing learning opportunities for children at home. Similarly, there is need to consolidate home-school/parent-teacher relations to go beyond the collection of school reports at the end of each term. This may be a partnership that represents the communicative behaviors between parents and school personnel about the child's educational experiences and progress. Active parental and family engagement in the child's learning process may yield a confidence in literacy teaching at home. As Phillips (2010) noted, "It is imperative that we teach parents how best to develop their children's literacy" (p. 126). In guiding low-income parents to mediate joint-writing activities with their children in Israel, Aram and Levin's (2002) research yielded results of significant effects (20–36%) on reading and writing measures. The impact of parent-mediated joint writing was reported despite the participants being from low-SES families.

Aram and Levin's (2002) results challenge the persistent view of homogeneity associated with low-income families. This study, as well, revealed that literacy experiences within families are not restricted to contextual factors. Rather, the physical and social settings are manipulated by psychological processes, such as attitudes. Interpretation of these results strongly suggests that parents and families play a critical role in the learning process of children. Therefore, parents and families need to be made aware of their responsibility to teach their children in informal settings.

Such activities within families and communities are part of the child's experience that enhance cognitive development and, in particular, the acquisition of reading skills.

This study supports Bronfenbrenner's (1979) contention that the process, person, context, and time elements interact within the environment. With the proximal processes, children experience progressively more complex reciprocal interaction because of active, evolving individual interactions with objects and symbols in the immediate external environment. The proximal processes in which children are engaged, such as literacy activities, must occur on a regular basis for the development and consolidation of reading skills. Bronfenbrenner identifies activities such as playing with other children or reading as mechanisms through which children come to understand their world and formulate ideas about their place within it (see also, Tudge, Mokrova, Hatfield, & Karnik, 2009). The children who play as teachers of reading for their peers exemplify a reading-interactive process in this study. The personal factors that influence the process of learning recognized in this study include PRAs, access to educational opportunities through the parents, and access to resources (i.e., reading materials). Each of these factors found within the ecological system influences the process of acquiring reading skills in the context of the home environment. Moreover, these elements work closely together to enhance the acquisition of reading skills.

This study is not without limitations. The first limitation is that the study did not include, in the analysis, the parents' reading level. If this aspect had been included, it would have given insights of the connection between the reading level, attitudes, and the organization of the literate home. Another shortcoming is the heavy reliance on self-reports. Parents reported on these aspects of the home environment and the results should be treated cautiously as they may be skewed by the social desirability effect. Further research in this area should consider assessing parental characteristics in totality. We recommend that while self-reports may be easy to administer, standardized tests could be useful in collecting information about parents' actual reading level. Second, widening the SES base in investigating literacy acquisition may offer a well-represented population rather than interpreting the results from one context. However, this limitation arose from the restricted sampling strategy of confining the overall RESUZ study to families of children enrolled in public schools. Hence, incorporating families who enroll their children in private schools may provide a wider SES base. Finally, comparing the PRA and FLE for children in other SES groups may open further discussion regarding how parents and families can contribute to their children's learning development or how schools and communities can support families in what appears to be an essential aspect of children's learning process. Yet, although these findings are indicative of the importance of the FLE in poor families, the influence of the school on literacy acquisition can not be overemphasized.

ENDNOTE

1. GraphoGame is the registered trademark of the University of Jyväskylä and Niilo Mäki Foundation. For more information, consult the GraphoGame Website (<https://graphogame.com>) or see Richardson and Lyytinen (2014; this issue) or Lyytinen, Erskine, Kujala, Ojanen, & Richardson (2009).

REFERENCES

- Aram, D., & Levin, I. (2002). Mother-child joint writing and storybook reading: Relations with literacy among low SES kindergartners. *Merill-Palmer Quarterly*, 48, 202–224.
- Arnold, D., Zeljo, A., Doctoroff, G., & Oritiz, C. (2008). Parental involvement in preschool: Predictors and the relation of involvement to preliteracy development. *School Psychology Review*, 37, 74–90.
- Baker, L. (2003). The role of parents in motivating struggling readers. *Reading and Writing Quarterly*, 19, 87–106.
- Baker, L., Sonnenschien, S., Serpell, R., Fernandez-Fein, S., & Scher, D. (1994). *Contexts of emergent literacy: Everyday home experiences of urban kindergaten children* (Research Report No. 24). Athens, GA, USA: National Reading Research Center.
- Bennett, K. K., Weigel, D. J., & Martin, S. (2002). Children's acquisition of early reading skills: Examining family contributions. *Early Childhood Reaserch Quarterly*, 17, 295–317.
- Bradley, L., & Bryant, P. D. (1983). Categorizing sounds and learning to read: A causal connection. *Nature*, 301, 419–421.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA, USA: Harvard University Press.
- Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. Lerner (Eds.), *Handbook of child psychology: Vol. 4. Theories of development* (pp. 999–1058). New York, NY, USA: Wiley.
- Bus, A. G., van IJzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research*, 65, 1–21.
- Cairney, T. (1997). Acknowledging diversity in home literacy practices: Moving towards partnership with parents. *Early Childhood Development and Care*, 127, 61–73.
- Calfee, R. (1997). Language and literacy, home and school. *Early Child Development and Care*, 127, 75–98.
- Castro, D., Lubker, B., Byrant, M., & Skinner, M. (2002). Oral language and reading abilities of first grade Peruvian children: Associations with child and family factors. *The International Society for the Study of Behavioural Development*, 26(4), 334–344.
- Central Statistical Office. (2010). *Census of population anytical report*. Retrieved March 31, 2014, from <http://www.zamstats.gov.zm/>
- Chen, S. Y., & Ko, H. W. (2009, October). *Family factors and reading practice, reading attitude and reading attainment*. Paper presented at the International Reading Association's Asian Literacy Conference (IDAC), Penang, Malaysia.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles, CA, USA: Sage.
- Cunningham, A., & Stanovich, K. (1993). Children's literacy environments and early word recognition subskills. *Reading and Writing: An Interdisciplinary Journal*, 5, 193–204.
- DeBaryshe, B. (1995). Maternal belief systems: Linchpin in the home reading process. *Journal of Applied Developmental Psychology*, 16, 1–20.
- Delgado-Gaitan, C. (1987). Mexican adult literacy: New directions for immigrants. In S. Goldman & K. T. Treuba (Eds.), *Becoming literate in English as a second language* (pp. 9–32). Norwood, NJ, USA: Alex.
- Dickinson, D., & Tabors, P. (2001). *Beginning literacy with language: Young children learning at home and school*. Baltimore, MD, USA: Paul H. Brookes.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4thed.). London, UK: Sage.
- Hammer, S., & Maccio, A. (2006). Early language and reading development of bilingual preschoolers from low-income families. *Language Disorders*, 26(4), 322–337.

- Howie, S. (2010, July). *The relationship between early childhood backgrounds and reading achievement in low and high achieving countries in PIRLS 2006*. Paper presented at the International Research Conference of the International Association for the Evaluation of Educational Achievement, Gothenburg, Sweden.
- Hungi, N., Makuwa, D., Ross, K., Saito, M., Dolata, S., Van Cappelle, F., Paviot, L., & Vellien, J. (2010). *SACMEQ III project results: Pupil achievement levels in reading and mathematics* (Working document No. 1). Retrieved May 19, 2014, from http://www.sacmeq.org/sites/default/files/sacmeq/reports/sacmeq-iii/working-documents/wd01_sacmeq_iii_results_pupil_achievement.pdf
- Isbell, R., Sobol, J., Lindauer, L., & Lowrance, A. (2004). The effects of storytelling and story reading on the oral language complexity and story comprehension of young children. *Early Childhood Education Journal*, 32(3), 157–163.
- Juel, C., Griffith, P. L., & Gough, P. B. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology*, 78, 243–255.
- Leseman, P. M., & de Jong, P. (1998). Home literacy: Opportunity, instruction, cooperation and social emotional quality predicting early reading achievement. *Reading Research Quarterly*, 33, 294–318.
- Lynch, J., Anderson, J., Anderson, A., & Shapiro, J. (2006). Parents' beliefs about young children's literacy development and parents' literacy behaviors. *Reading Psychology*, 27, 1–20.
- Lyytinen, H., Erskine, J., Kujala, J., Ojanen, E., & Richardson, U. (2009). In search of a science-based application: A learning tool for reading acquisition. *Scandinavian Journal of Psychology*, 50, 668–675.
- McBride-Chang, C., Chow, Y., & Tong, X. (2010). Early literacy at home: General environmental factors and specific parent input. In D. Aram & O. Korat (Eds.), *Literacy enhancement across orthographies and cultures* (pp. 97–109). New York, NY, USA: Springer.
- Mullis, I. V. S., Martin, M. O., Kennedy, A. M., & Foy, P. (2007). *PIRLS 2006 international report: IEA's [International Association for the Evaluation of Educational Achievement] Progress in International Reading Literacy Study in primary schools in 40 countries*. Chestnut Hill, MA, USA: Boston College.
- Ojanen, E. (2007). *Sewero La-ma-u: A phonetic approach to literacy teaching in Zambia* (Unpublished master's thesis). University of Jyväskylä, Finland.
- Phillips, L. (2010). The making of literate families: Considerations of context and misconceptions. In D. Aram & O. Korat (Eds.), *Literacy enhancement across orthographies and cultures* (pp. 123–135). New York, NY, USA: Springer.
- Purcell-Gates, V. (1995). *Other people's words: The cycle of low literacy*. Cambridge, MA, USA: Harvard University Press.
- Reese, L., & Gallimore, R. (2000). Immigrant Latinos' cultural model of literacy development: An evolving perspective on home-school discontinuities. *American Journal of Education*, 108, 103–134.
- Richardson, U., & Lyytinen, H. (2014). The GraphoGame method: The theoretical and methodological background of the technology-enhanced learning environment for learning to read. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*, 10(1), 39–60.
- Schneider, P. (1996). Effects of pictures versus orally presented stories on story retellings by children with language impairment. *American Journal of Speech-Language Pathology*, 5(1), 86–96.
- Sénéchal, M. (2006). Testing the home literacy model: Parent involvement in kindergarten is differentially related to Grade 4 reading comprehension, fluency, spelling, and reading for pleasure. *Scientific Studies of Reading*, 10, 59–87.
- Sénéchal, M., & LeFevre, J. (2002). Parental involvement in the development of children's reading skill: A 5-year longitudinal study. *Child Development*, 73, 445–460.
- Sénéchal, M., LeFevre, J., Thomas, E., & Darley, K. (1998). Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly*, 33, 96–116.
- Serpell, R., Baker, L., & Sonnenschen, S. (2005). *Becoming literate in the city*. New York, NY, USA: Cambridge University Press.

- Serpell, R., Sonnenschein, S., Baker, L., & Ganapathy, H. (2002). Intimate culture of families in the early socialisation of literacy. *Journal of Family Psychology, 16*, 391–405.
- Snow, C. E. (1991). The theoretical basis for relationships between languages and literacy development. *Journal of Research in Childhood Education, 6*, 5–10.
- Snow, C. E., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC, USA: National Academic Press.
- Sonnenschein, S., Brody, G., & Munsterman, K. (1996). The influences of family beliefs and practices on children's early reading development. In L. Baker, P. Afflebach, & D. Reinking (Eds.), *Developing engaged readers in school and home communities* (pp. 1–20). Mahwah, NJ, USA: Lawrence Erlbaum Associates.
- Storch, S., & Whitehurst, G. J. (2001). The role of family and home in the literacy development of children from low-income backgrounds. *New Directions for Child and Adolescent Development, 92*, 53–71.
- Sulzby, E., & Teale, W. H. (1991). Emergent literacy. In R. Bar, M. Kamil, P. Monsenthal, & D. P. Pearson (Eds.), *Handbook of reading research* (Vol. 2; pp. 727–757). New York, NY, USA: Longman.
- Teale, W. H. (1978). Positive environments for learning to read: What studies of early reading tell us. *Language Arts, 55*, 922–932.
- Tudge, J. R. H., Mokrova, I., Hatfield, B. E., & Karnik, R. B. (2009). Uses and misuses of Bronfenbrenner's bioecological theory of human development. *Journal of Family Theory and Review, 1*, 198–210.
- Use of local languages as a medium of instruction to be implemented next year for pre-Grade 4. (2013, January 18). *Lusaka Times*. Retrieved May 27, 2014, from <http://www.lusakatimes.com/2013/01/18/use-of-local-languages-as-media-of-instruction-to-be-implemented-next-year-for-pre-grade-4/print/>
- van Steensel, R. (2006). Relations between socio-cultural factors, the home literacy environment and children's literacy development in the first years of primary education. *Journal of Research in Reading, 29*, 367–382.
- Weigel, D. J., Martin, S. S., & Bennett, K. K. (2006). Mothers' literacy beliefs: Connection with the home literacy environment and preschool children's literacy development. *Journal of Early Childhood Literacy, 6*, 191–211.
- Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*, 848–872.
- Whitehurst, G. J., & Lonigan, C. (2001). Emergent literacy: Development from prereaders to readers. In S. B. Newman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 11–29). New York, NY, USA: Guilford Press.

Authors' Note

This research was supported under the auspices the Reading Support for Zambian Children (RESUZ) project that was funded by a grant from the University of Jyväskylä, an Academy of Finland Award. The authors thank the children, parents, teachers, school personnel, and research assistants for making this study possible.

All correspondence should be addressed to
 Tamara Chansa-Kabali
 The University of Zambia
 Psychology Department, Great East Road Campus
 P.O. Box 32379, Lusaka, Zambia 10101
 tamara.kabali@unza.zm; tamarachansa@yahoo.com

Human Technology: An Interdisciplinary Journal on Humans in ICT Environments
 ISSN 1795-6889
www.humantechnology.jyu.fi