Juxtaposed Sequential Images with Text:

A Comparative Study in Comprehension between Comics and Text

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Dedication

This work is dedicated to my wife Lois. P = .000
# Table of Contents

Dedication ........................................................................................................ iv

Table of Contents ............................................................................................ v

List of Tables .................................................................................................... ix

List of Figures .................................................................................................. xi

List of Maps ..................................................................................................... xii

Abbreviations .................................................................................................. xiii

Acknowledgements .......................................................................................... xiv

Abstract ........................................................................................................... xv

## Chapter 1 The Problem ................................................................................. 1

1.1 Introduction ............................................................................................... 1
1.2 Background ............................................................................................... 2
1.3 Purpose ...................................................................................................... 3
1.4 Goals ......................................................................................................... 3
1.5 Significance .............................................................................................. 4
1.6 Research Questions ................................................................................... 4
1.7 Definitions ............................................................................................... 4
1.8 A brief history of JSIT ............................................................................. 6

## Chapter 2 Literature Review ....................................................................... 9

2.1 Why comics work – Cognitive Aspects .................................................. 10
2.1.1 Cognition and Memory ...................................................................... 10
2.1.2 Images and the Brain ........................................................................ 10
2.1.3 Cultural differences in seeing depth ................................................... 11
2.1.4 Schemata and Iconic Memory ............................................................ 12
2.1.5 Perception and Memory .................................................................... 13
2.1.6 Relevance Theory ............................................................................. 14
2.2 Why comics work – Social/Cultural Aspects ......................................... 17
2.2.1 The cultural side of comics ................................................................. 17
2.2.2 Reading Pictures ................................................................................. 17
2.2.3 Understanding Comics ...................................................................... 18
2.2.4 Visual language .................................................................................. 19
2.2.5 A Bridge to Literacy ........................................................................... 20
2.3 Potential Problems with Pictures ............................................................. 22
2.4 Comic book use in Sub-Saharan Africa .................................................. 23
2.5 JSIT materials and Christian ministry ...................................................... 24
2.6 The Jesus Messiah Picture Book ............................................................... 25
2.7 Making comic books cross-cultural ......................................................... 26
Chapter 3 Research and Findings .................................................................28
3.1 Research design .................................................................................28
  3.1.1 How the subjects were chosen ..........................................................30
  3.1.2 Protocol for conducting the tests and interviews .................................31
  3.1.3 Problems encountered during the data gathering process ....................33
  3.1.4 Language difficulties ......................................................................33
  3.1.5 Translation of questions ....................................................................34
  3.1.6 Subject preferences .........................................................................34
3.2 Research findings for Fon .................................................................34
  3.2.1 Subjects ..........................................................................................35
  3.2.2 Education levels ................................................................................35
  3.2.3 Test validity .....................................................................................36
  3.2.4 Item validity .....................................................................................36
  3.2.5 Revised comprehension levels for first story .......................................38
  3.2.6 Analysis of the Fon data ....................................................................39
  3.2.7 French PB and French Text ..............................................................42
  3.2.8 Fon PB and French PB .....................................................................43
  3.2.9 A closer look at the data ....................................................................43
    3.2.9.1 Education ....................................................................................44
    3.2.9.2 Gender ......................................................................................45
    3.2.9.3 Gender and education .................................................................46
    3.2.9.4 Reading Frequency ......................................................................46
    3.2.9.5 Age ............................................................................................47
    3.2.9.6 Correlation between comprehension and independent variables ....47
  3.2.10 Refined analysis for Fon .................................................................48
    3.2.10.1 Comparing the picture book modes ............................................49
    3.2.10.2 Looking at the French modes ....................................................50
    3.2.10.3 Looking at the Fon mode ..........................................................51
    3.2.10.4 Correlation for education and reading frequency across all modes ...52
  3.2.11 Conclusions for Fon analysis .........................................................52
3.3 Kabiye analysis ..................................................................................53
  3.3.1 Subjects ..........................................................................................53
    3.3.1.1 Gender ......................................................................................53
  3.3.2 Test validity .....................................................................................53
  3.3.3 General results among the Kabiye ......................................................56
  3.3.4 The independent variables and their impact on comprehension ...........57
    3.3.4.1 Gender ......................................................................................57
    3.3.4.2 Age ...........................................................................................59
    3.3.4.3 Education levels .........................................................................59
    3.3.4.4 Reading frequency .....................................................................60
    3.3.4.5 Comparison of French modes ....................................................61
  3.4 Refined analysis for Kabiye ...............................................................62
    3.4.5.1 Comparison of the French modes .................................................63
    3.4.5.2 Comparing the picture book modes ............................................65
    3.4.5.3 Looking at the factor of mode (French PB vs. French Text) ...........66
3.4.5.4 Looking at the language factor for Kabiye ........................................66
3.4.5.5 Correlation for education and reading frequency across all modes ....67
3.5 Conclusions for the Kabiye analysis .........................................................67

Chapter 4 Conclusions .......................................................................................69
4.1 From Fon analysis .......................................................................................69
4.2 From Kabiye analysis ...................................................................................70
4.3 From a comparison of both Fon and Kabiye analysis looked at together ....72

Chapter 5 Implications .......................................................................................75
5.1 For vernacular scripture use .........................................................................75
5.1.1 For local churches ...................................................................................76
5.1.2 For church planting .................................................................................77
5.2 For adult literacy programs ..........................................................................77
5.3 For governments .........................................................................................78

Chapter 6 Suggestions for Further Study ..........................................................81
6.1 Testing transition guides to see if they improve comprehension .................81
6.2 Testing those 15 years or younger ...............................................................81
6.3 Fon counting system and difficulties in comprehension ................................82
6.4 Picture books in relation to a local language reading program .....................82
6.5 Accompanying use of audiocassette recordings and the picture books ......83
6.6 Longitudinal study to test for comprehension retention ..............................83
6.7 Font size impact on readability. .................................................................83
6.8 Study those with less than 8 years of formal education ...............................84
6.9 JSIT materials accepted as Scripture? .......................................................84
6.10 Bible based JSIT materials in a Muslim context .........................................84

Appendix A ...........................................................................................................85
Research materials .............................................................................................85
A.1 Questionnaires ............................................................................................85
First Story French version ..................................................................................85
Second Story French version .............................................................................86
First Story Fon version .......................................................................................87
Second Story Fon version ..................................................................................88
First Story Kabiye version ................................................................................89
Second Story Kabiye version .............................................................................90
First Story English version ..............................................................................91
Second Story English version ..........................................................................92
A.2 Text Version of First Story in French ..........................................................93
Jésus nourrit une foule ......................................................................................93
A.3 Text Version of Second Story in French .....................................................94
Jésus a ressuscité Lazare ..................................................................................94
A.4 Jesus Messiah Picture Book .........................................................................96
French version of first story (page 1) ...............................................................96
French version of first story (page 2) ...............................................................96
French version of first story (page 2) ...............................................................97
List of Tables

Table 3.1 Distribution of sample among the modes of the research design ........................................30
Table 3.2 Education levels among Fon respondents.................................................................35
Table 3.3 Gender for each mode among Fon respondents..........................................................36
Table 3.4 Chi-square test for question 2 of the first story ............................................................37
Table 3.5 Chi-square test for question 5 of the first story ............................................................37
Table 3.6 Statistical summary of original data set as compared with revised data set .....................38
Table 3.7 Revised comprehension levels for the first and second stories ....................................39
Table 3.8 Comprehension levels between all modes for the Fon data ..........................................41
Table 3.9 Comprehension levels between French and Fon picture books .....................................43
Table 3.10 Mean number of years of education of subjects in the modalities by language ..................44
Table 3.11 Number of males and females reading in French and Fon ..........................................45
Table 3.12 Average years of formal education between males and females ..................................46
Table 3.13 Average number of days per month readers in each mode practiced reading ................47
Table 3.14 Average age of males and females .............................................................................47
Table 3.15 General Linear Model (GLM) statistical summary of all 3 modes with comprehension as the response variable .................................................................49
Table 3.16 Statistical summary for the Fon and French PB modes .............................................49
Table 3.17 GLM with comprehension as the response variable and education, gender, age, reading frequency and language mode as covariates ......................................................50
Table 3.18 Statistical summary for French .....................................................................................51
Table 3.19 Statistical summary for Fon .........................................................................................51
Table 3.20 Correlation for education and reading frequency for all 3 modes .................................52
Table 3.21 Gender for each mode among Kabiye respondents .......................................................53
Table 3.22 Chi square test on question 8 in the first story .............................................................54
Table 3.23 Chi-square test on question 8 of the second story .......................................................55
Table 3.24 Profile of comprehension levels for the two stories ....................................................56
Table 3.25 Adjusted comprehension totals for each mode .............................................................57
Table 3.26 Chi-square: Gender vs. Mode .......................................................................................58
Table 3.27 T-test: Gender vs. Education .........................................................................................58
Table 3.28 Correlation between Education and Comprehension ..................................................59
Table 3.29 Average age of respondents by mode .........................................................................59
Table 3.30 Average years of formal education in French for each mode ........................................60
Table 3.31 Average number of days per month readers in each mode practiced reading ................61
Table 3.32 One-way ANOVA of the two French modes ................................................................61
Table 3.33 Average years of education in French among male and female respondents for the French modes .................................................................................................................61
Table 3.34 Impact of each independent variable between all 3 modes ........................................62
Table 3.35 General linear model statistical summary of all 3 modes with comprehension as the response variable ..............................................................................................................63
Table 3.36 Analysis of the independent variable upon the two French modes ...............................63
Table 3.37 General linear model for the French modes .................................................................64
Table 3.38 Analysis of the independent variable upon the PB modes ..........................................65
Table 3.39 General linear model with comprehension as the response variable and education and language as the covariates .................................................................65
Table 3.40 Statistical summary for French .................................................................66
Table 3.41 Statistical summary for Kabiye .................................................................66
Table 3.42 Correlation for education and reading frequency .................................67
Table E 1 Question 7, First Story .............................................................................119
Table E 2 Question 5, Second Story ......................................................................120
Table E 3 Question 7, Second Story ......................................................................121
List of Figures

Figure 3.1 Box plot of comprehension in all 3 modes ..............................................41
Figure 3.2 Box plot comparison of results by mode .......................................................56
Figure 5.1 Comprehension as a function of education in Kabiye and French .............78
Figure 5.2 Comprehension as a function of education in Fon and French .................80
Figure E 1 Jesus receiving the five loaves and two fish .............................................119
Figure E 2 Lazarus in grave clothes ........................................................................120
Figure E 3 Jesus instructing that the stone be removed from the grave entrance .......121
List of Maps

Map 1 Togo and Benin located on the West coast of Africa........................................29
Map 2 Togo – Kabiye research areas........................................................................29
Map 3 Benin – Fon research areas........................................................................29
Abbreviations

AIDSCAP – AIDS Control and Prevention project

BD – Bandes dessinées (French term for comic book)

JMPB – Jesus Messiah Picture Book

JSIT – juxtaposed sequential images with text

L1 – A person’s mother tongue or first language.

L2 – A person’s second language

LWC – Language of wider communication

SIL – formerly known as the Summer Institute of Linguistics; now known as SIL International.

USAID – United States Agency for International Development
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Abstract

This study seeks to show the legitimacy of juxtaposed sequential images with text and how this medium helps readers to comprehend better than reading a text version of the same information. A comic book on the life of Jesus Christ was tested in two language groups in Togo and Benin, West Africa. The results show that this medium holds promise for motivating new readers and helping them to attain good levels of comprehension in relation to purely textual information. It also shows the importance of the use of the language of presentation in a multilingual environment.
Chapter 1 The Problem

1.1 Introduction

This thesis is about a comic book. Generally, it is about the comic book medium and its uniqueness in communication. Specifically, it is about a comic book which tells selected stories from the life of Jesus Christ based on the four gospels in the New Testament of the Bible. The word “comic” comes with a lot of baggage and may predispose some to think less of a perfectly legitimate form of communication. Therefore, it may be helpful to refer to this medium of communication as “juxtaposed sequential images with text.” Juxtaposed sequential images with text (JSIT) is not a new idea. People have been using this method of communication for thousands of years.

In Medieval times the only official version of the Bible was in Latin, a language that most of the people of Europe could not read. Images were often used in sequence to tell the major Bible stories so that the common person would be able to have some access to Biblical knowledge. Since the 1900s there has been a concerted effort to translate at least portions of the Bible into the many languages of the world. However, the major challenge for many of the people groups receiving these translations is that they are largely oral cultures with very little literature in their languages.

Another complication is that people who have made the effort to read in their language can lose their skill of reading after several years because not enough interesting and engaging reading materials are available to keep them interested in reading. The Bible can be too complex for new readers to comprehend. For many of these people groups, even if the Bible has been translated in part or in whole, the Scriptures still remain inaccessible.
Recent developments in Bible Storying have made the Bible more accessible and have resonated with oral cultures. However, these oral cultures still need to be stimulated to become literate or else they risk becoming marginalized, not only in relation to other groups around them, but also in an increasingly globalized world. Engaging and motivating reading materials are needed to help illiterates and new readers stretch themselves and make the effort to read. Reading materials that exploit JSIT can be a very appealing way of conveying the Scriptures. They are visually stimulating, culturally engaging, and use fewer words to convey the same amount of meaning that the Scripture in textual form provides.

Finally, my colleagues and others in the mission venture need to be aware of this genre of material and how it might best be used to engage language communities to discover God’s Word by seeing, reading, and understanding it.

1.2 Background

In September 1999, Geerhard Kloppenburg, a colleague from the Netherlands, showed me a copy of the Jesus Messiah picture book (JMPB) that he had translated into the Miskito language of Nicaragua. He did this toward the end of the translation project to help get people interested in the Miskito Bible that was about to be published. As coordinator for another translation program coming to completion among the Fon of Benin, Geerhard wanted to translate the JMPB into Fon for the purpose of promoting the Scriptures among the Fon just before the completion of the translation of the whole Bible in their language. We further discussed the idea of making the JMPB available to each language group in Togo and Benin that met the following criteria:

1. a functioning translation team still in place to do the translation
2. at least one gospel needed to have been translated and consultant checked, and
3. the language group had to provide a viable distribution plan.

A total of 29 questionnaires were sent out and 20 favorable responses were received. Because of the scope of the project, a coordinator would be needed, not only in Benin and Togo, but in the Netherlands as well. I was asked to be the on-site coordinator.

Since the project had taken on a larger scale, it seemed prudent to conduct a pilot project to test the picture books to determine if they could indeed be a valuable ministry tool. Two language groups were chosen for the pilot: the Fon, the majority language group in Benin, and the Kabiye, a mainly rural group living throughout Togo. In early 2003, the director of Proclama, the publisher of the JMPB, Oswin Ramaker, came to Benin and Togo. During his visit, a general time frame was established for the project.

The leadership of the SIL Togo Benin branch asked me to consider further studies and work in the area of Scripture Use. In June 2003, I started a master’s degree at the Graduate Institute of Applied Linguistics. I chose the JMPB project as the topic of my thesis focusing specifically on levels of comprehension between those using the JMPB and those reading text.

1.3 Purpose

The purpose of this study is to investigate the potential efficacy of the JSIT format in conveying meaning through testing the Jesus Messiah Picture Book.

1.4 Goals

The following goals were established for this thesis:

1. To demonstrate that JSIT materials can provide just as much meaning as text;
2. To compare reading comprehension levels between those reading text and those reading the Jesus Messiah Picture Book;

3. To compare reading comprehension levels between L1 and French;

4. To compare reading comprehension levels between urban and rural areas;

5. To make recommendations for further JSIT-related studies;

6. To show word counts between JSIT and text only formats.

1.5 Significance

Quality JSIT materials can be very helpful in promoting the Scriptures in the mother tongue (L1) among beginning readers because the same amount of information is transferred to the reader while the reading load is lighter and the genre more appealing.

1.6 Research Questions

1. Is there a difference in comprehension between reading JSIT and text?

2. Is there a difference in comprehension between reading in L1 and French?

3. Is there a difference in comprehension between rural and urban readers?

4. Does the decreased word count in JSIT affect comprehension?

1.7 Definitions

Several of the following definitions are still in the process of being defined by scholars. Some of the definitions are not used in the thesis but are shown so that the reader can see how JSIT materials are manifested in various forms.

**Cartoon:** A singular image, it typically falls into one of three categories: the gag cartoon, the editorial cartoon or the political cartoon.
**Comic strip:** Similar to a cartoon, it is distinguished by consisting of a sequence of images. The term “comics” is often used to describe the page of a newspaper upon which comic strips are found.

**Comic book:** A magazine or book containing sequential art in the form of a narrative. This term is predominantly used in the United States with the term comic or comic magazine preferred in Europe. Comic books are often called comics for short. This term does not necessarily indicate that the comic book is humorous, and in fact its dramatic seriousness varies widely (http://en.wikipedia.org/wiki/Comic_book).

**Comic magazine:** A magazine in Europe distinguished from U.S. comic books largely through the superior quality of paper and cover card stock used.

**Graphic novel:** A type of comic book, usually with long and fairly complex storylines and often aimed at more mature audiences (http://en.wikipedia.org/wiki/Graphic_novel).

**Bandes dessinées:** French term for the comic book medium. It is a well-respected art and literature form in Europe.

**Manga:** Japanese term for the comic book medium. Its unique style of drawing comics allows for prolific production. It is the best selling literature in Japan.

**Comic annual:** A format unique to the United Kingdom, it assembles various comic series into one volume.

**Comic album:** An anthology-format comic book with multiple stories that is published and distributed as a book rather than a periodical.
Web comic: A new term that describes a product also known as ‘online comics’ and ‘web comics.’ The uniqueness of web comics is that the comics can be self-published and the frames and images can be made to be interactive with the reader (McCloud 2000).

Instructional/educational comics: Instructional or educational products using sequential image instructions, such as those on an airplane safety card. Some educators have used comics to teach subjects, resulting in a higher degree of success among students (Bitz 2004).

Storyboard: A graphic organizer such as a series of illustrations or images displayed in sequence for the purpose of previsualizing a motion graphic or interactive media sequence including website interactivity (http://en.wikipedia.org/wiki/storyboard).

Minicomic: Small comics usually produced by photocopy and stapled with a hand-made binding. In the United States, several cartoonists started out by producing these small 5.5 inch by 4.25 inch minicomics.

1.8 A brief history of JSIT

The term “comics” came about in the late 19th century to describe caricatures and amusing trivial stories. In the U.S. the adjective “comic” was used to identify early newspaper strips which initially featured humorous narratives. The term has now evolved into a literary medium with many sub-categories. The term “comics” has remained in popular usage to refer to the form rather than the content. Will Eisner defines comics as “the printed arrangement of art and in sequence, particularly in comic books” (Eisner 1996:3)
Scott McCloud, in his book *Understanding Comics*, defines comics as “juxtaposed pictorial and other images in deliberate sequence, intended to convey information and/or to produce an aesthetic response in the viewer” (McCloud 1993:7-9).

There are several examples in society that may fall into the above definitions yet are not referred to as comics. These are instructional manuals, advertisements, storyboards for films, illustrated books, etc. David Kunzle defines the comic medium by establishing four criteria:

1. there must be a sequence of separate images;
2. there must be a preponderance of image over text;
3. the medium … must be … a mass medium, and;
4. the sequence must tell a story which is both moral and topical (Kunzle 1973:2-3).

Later, David Carrier added another point, “as a narrative sequence with speech balloons” (Carrier 2000:4).

Scholars have argued the origin of this form of communication, but many have given Egyptian hieroglyphics, Japanese *emaki*, European stained glass windows, pre-Columbian Central American manuscripts, and the Bayeux Tapestry (Rud 1992) as classic examples of the juxtaposed sequential images that have been used for effective communication over the millennia (McCloud 1993). The modern form of comics is largely recognized as having its genesis with Rodolphe Töpffer, a francophone Swiss artist in the early 19th century who designed picture stories which became popular throughout Europe and the US. His picture story, translated “Obadiah Oldbuck,” is considered the first comic book sold in the US in 1842 (Kunzle 2007). In 1929, the “The Adventures of Tintin” was published in a Belgian newspaper and a year later the comic
strips were put together in a book format entitled “Tintin in the Land of the Soviets.” This type of publication became known as the European comic album format or the French term, “bandes dessinées.”

In Japan, manga started in the late 18th century. It wasn’t until after WWII that its current form took shape. Manga means “random (or whimsical) pictures.” Manga is distinguished by more of a storyboard look with only essential dialog coming from the characters. Facial features are exaggerated to add more distinct characterization. Manga is well respected as both an art form and as popular literature. The weekly sales of manga materials in Japan equal the annual output of the entire comic industry in the US (Schodt 1998:19 - 20).
Chapter 2 Literature Review

Trying to find scholarly materials on the comic book medium is a challenging task since relatively little has been written on the subject in the US, where it has not been treated seriously as a vehicle of communication in relation to other forms of communication. There is currently a rapidly developing body of scholarly study in Japan based on the popularity of manga comic books and some scholarly studies have also come out of Europe. References used in this literature review came from the fields of education, cognitive psychology, linguistics and medicine.

Several universities house comic book libraries such as the Michigan State University Comic Library. The internet has become a rich resource for comic book research, and a large comic bibliography is now available on line.

This section begins with a brief orientation on the history of the comic book medium and several attempts to define it, then presents various points of view about cognition and the use of the comic book medium. The next section treats the cognitive aspect of how the brain processes information and the importance of schema and iconic memory, as well as the challenge of accurately deciphering pictures. The third section deals with the medium itself as an effective means of communication and as a motivational resource to bridge new readers to functional literacy, with reference to the comic book as an emerging form in sub-Saharan Africa.
2.1 Why comics work – Cognitive Aspects

2.1.1 Cognition and Memory

This section deals with how the brain sees images and processes information, beginning with a review of several studies on the brain. Several theories of cognition and communication are explored to help show the value of the comic medium to human communication.

2.1.2 Images and the Brain

The largest portion of the brain is devoted to visual intelligence (Hoffman 1998; Smith, Moriarty, Barbatsis, Kenney 2005). About 70 percent of the body’s sensory receptors are found in the eyes (Wolfe 2001:152). The optic nerves connect to the part of the brain called the thalamus. All impulses that arise from the sensory systems (except smell) pass through this golf ball-sized group of cells. Visual data are not subject to the same censorship that other sensory systems have. The thalamus simply receives the optic nerve’s impulses and transfers them directly to the part of the brain known as the visual cortex located in the back of the brain (Lester 2003:23).

Hemispheric studies on the brain indicate that the left hemisphere is the more analytical side and the chief area that processes visual and auditory input. It analyzes, counts, keeps track of time, verbalizes, stores and processes symbols, and utilizes logic to solve problems. The right hemisphere establishes context, utilizes intuition to solve problems, imagines, works outside of a concept of time, perceives relationships, categorizes, works holistically, and interprets spatially (Smith, Moriarty, Barbatsis, Kenney 2005). The left hemisphere processes the semantic components and understands them linearly and concretely. It can draw conclusions based on available facts, and can
suggest solutions to problems. What it cannot do is interpret metaphorically, nor can it extract topic, theme, or moral. In short, it cannot provide a context for the information it handles (Jakobson 1980).

There are at least 30 distinct areas of the brain responsible for seeing. Once the visual cortex has processed a visual message, this message is essentially sent along one of two pathways, one which distinguishes distance and allows us to grab items and another which recognizes objects and attaches meaning to them. After this process, the information goes to the amygdala where an emotion is assigned it (Lester 2007). Brain cells notice the difference between color, form, depth, and movement and are stimulated by the differences in visual images rather than the intensity of them (Hubel 1988). This is one explanation why pictures naturally draw our attention. “The brain has little time for nonsense. It’s a meaning maker, constantly searching for patterns, connecting bits of new information to old, fashioning wholes from parts and parts from wholes” (Cary 2004:18).

2.1.3 Cultural differences in seeing depth

One of the fundamental challenges of reading pictures is that of seeing depth. “The image at the eye has two dimensions, therefore it has countless interpretations in three dimensions” (Hoffman 1998:23). This aspect of depth has to be constructed and is based on rules from within one’s culture. If someone does not have any orientation toward an illustration, then they initially interpret it in their left hemisphere as a symbol with a specific meaning based on their prior experience (Gardner 1979). This interpretation could be quite different from what the illustrator/author intended.

However, the benefit of pictures is that they can make the transfer from the left brain to the right brain much quicker than decoding text. People who have a hard time
reading text will frequently move from text to pictures to text as they read, using the pictures as a tool for understanding. In contrast, good readers pay little attention to the illustrations during their reading (Rusted and Coltheart 1979). At the heart of understanding is the ability of a person to form a mental picture in their mind. Until this mental picture is crystallized in the mind of the reader, comprehension and learning do not take place (Hibbing and Randkin-Erickson 2003).

2.1.4 Schemata and Iconic Memory

A popular theory of cognition was postulated by Frederic Bartlett, a cognitive psychologist in the 1930s. He argued that the mind creates schemata, a type of mental filing system in which new information is processed and posited. Schemata allow for the rapid processing of new information and ignore information that does not fit a particular schema (Bartlett 1932). One special kind of schema is a script.

A script is a structured representation describing a stereotyped sequence of events in a particular context. It is a structure for a schema involving a common understanding about the characteristic actors, objects and sequence of actions in a stereotypical situation (Sternberg 1996:508).

The mind, being limited in its capacity to receive information, must be selective. Since the mind has a propensity for remembering images, images are a very good memory tool to help store information. Allan Paivio has called this capacity “iconic memory.” Simply put, we remember pictures better than we remember words (Paivio 1972). Iconic memory can retain information for a very long period of time, even thirty years later, claims an article written by Aaron. “Comic books have the best of all worlds in that iconic learning is maximized and integrated into the construction of the schemata” (Aaron 1998).
“As we learn, the brain builds neural networks, connecting and organizing information in handy categories. One way to describe that building process is in terms of three levels of learning: concrete, representational (or symbolic), and abstract” (Wolfe 2001:135). The optimal way of learning is concrete – for example, actually experiencing a sunset at the beach with the sand between your toes. However, this type of learning is not often readily available. The representational or symbolic level of learning is an effective alternative for learners. Visual materials – photos, maps, charts, paintings, stick-figure drawings, and professionally done comics - serve as “stand-ins” when the real items are unavailable. A third level of learning presents concepts in the abstract, “words with more words, words without concrete or visual representations” (Cary 2004:23).

2.1.5 Perception and Memory

In 1981, Randall Harrison proposed a theory of comics (what he refers to as cartoons) which was based on a study during World War II on how rumors spread. The researchers (Allport and Postman 1945) used cartoon-like illustrations to study the diffusion of rumors. They showed one individual a picture and then had that person recount to someone else what was in the picture without reference back to the image(s). The second person then told a third, the third told a fourth and so on. The researchers carefully observed how the information was being transmitted during each retelling. They came up with three processes which they labeled leveling, sharpening, and assimilation.

In the process of leveling, the story becomes simplified. As the narrative moved, the recounting of the details tended to grow shorter, more concise, more easily grasped and told (Harrison 1981:55). In the second process, sharpening, people selected and retained a more limited number of details from a larger context. More details dropped out
of the story, while other details gained importance (Harrison 1981:56). In the third process of assimilation the story became a tale that made sense according to the context of the individual telling it. This might mean that certain details were modified or changed to fit the individual’s perception. An example from the Allport and Postman research was that many people changed the name of a brand of soap advertised in a picture because its description was similar to a popular brand of soap.

Harrison applies this observation of how people perceive and memorize to cartoons—the comic medium. “The cartoonist radically ‘levels’ what we usually see in our perceptual field…the figure is usually simplified, the author dropping needless objects and details” (Harrison 1981:57). The artist ‘sharpens’ the images to stand out from the background. Certain features are made more prominent. “Finally, the cartoonist ‘assimilates’ through exaggeration and interpolation” (Harrison 1981:57). For example, a mean person can be made to look absolutely villainous by the author/illustrator. All these aspects combine, according to Harrison, to reinforce the reader’s natural perceptive and memorizing processes. “In its simplest form, the cartoon is ‘communication to the quick.’ It is fast. It is lively. It is penetrating. But that may be a very quick caricature of the cartoon’s potential” (Harrison 1981:137).

2.1.6 Relevance Theory

Another theory that could explain the dynamic of the comic book is relevance theory. One principle of relevance theory says that people are willing to put time and effort (processing costs) into the communication process in relation to a perceived benefit.

The effects of processing the information must at least outweigh the cost of processing it for the communication to be relevant. Since our minds are
geared to optimize relevance, we give our mental energies to stimuli that are likely to produce greater cognitive effects (Hill 2006:8).

The seminal work of relevance theory in human communication is by Sperber and Wilson (1995). They were attempting to come up with a pragmatic theory that would explain how people infer meaning from verbal stimulus. They wanted to expose the importance of “explicatures” (things that are explicit) and “implicatures” (things that are implicit or inferred) in the interpretative act. This is the aspect of “reading between the lines” or bringing extra information to the speech act by the listener in order to make sense out of what is said by the speaker. Relevance theory explains all kinds of ostensive communication but focuses on verbal communication (Hill 2006).

Speakers, or in this case, authors/illustrators, believe they have information that will improve or modify their hearer’s cognitive environment. These modifications or improvements of a person’s cognitive environment are called “cognitive effects.” In essence, communication is relevant to the degree that it has cognitive effects. “The greater its cognitive effects, the greater its relevancy” (Hill 2006: 3).

A great advantage of the juxtaposed sequential images with text medium is that these cognitive effects can be obtained more quickly and efficiently by the hearer/reader. For communication to succeed, speakers need to build a mutual cognitive environment with their hearers. JSIT accomplishes this type of environment by the use of visual stimulus, which may be easier for certain audiences to process than verbal stimuli. Even if the images do not lead directly to cognitive effects, they may serve to make other information relevant. This is defined as background information which contributes only indirectly to relevance by reducing the processing effort required (Sperber and Wilson 1995:217).
The JSIT genre stimulates a desire in the reader to expend more effort to process the text and derive meaning. “Expectations are the fuel that provides processing energy. When we expect greater effects, we are willing to invest more energy. Genre affects expectations” (Hill 2006:8). Cary puts this thought in a slightly different way: “The mind is shamelessly self-centered. It seeks out what is aesthetically pleasing and engages it. It looks for what it perceives to be relevant” (Cary 2004:19).

By way of example, the processing cost of reading a comic book on the life of Christ will be less in the mind of a beginning or struggling reader than trying to read through one of the four Gospels from the Bible. Even accomplished readers attest to this aspect of processing cost. One of the Kabiye subjects in this research confessed: “The comic book (JMPB) allows me to keep reading even though I am lazy” (Appendix E). When someone from a non-literate culture is faced with a page full of text, often in a small font size, with very little white space, the processing cost seems very high. Even before trying to interpret what is being said, the vehicle through which the information is presented may be a major factor in the reader’s willingness to spend any amount of effort to try to understand the communication.

In some cases, images in a comic book can be a sort of visual footnote to the text, quickly bringing added information that complements the text. This information can help to enlarge the shared cognitive environment by modifying a reader’s cognitive environment to resemble the one that was intended by the original author (Hill 2006:2). In the case of the JMPB, when Jesus raises Lazarus from the grave, the pictures show the manner in which first century Jews buried their dead in a tomb carved in the rock. This allows the reader to clearly see how Jesus could say, “Lazarus, come out!” and Lazarus
could actually walk out of the grave. Even if a description of first century burial is
offered in the text, there is the conception of burial currently performed by the reader’s
culture that tends to dominate their thinking. The image clarifies the text and vice versa.

2.2 Why comics work – Social/Cultural Aspects

2.2.1 The cultural side of comics

This section focuses on the cultural dimension of comics and its importance in the
process of learning. Pictures are talked about in terms of their universality and the ability
to stimulate people to read. Some comic book scholars describe the comic book’s
dynamics and uniqueness. Various educators talk about the potential for comics to teach
others as well as the potential problems that can arise with their use. At the end of the
section there is a brief treatment of comics in Africa, the Jesus Messiah Picture Book, and
the translatability of comics across cultures.

2.2.2 Reading Pictures

People need to be taught how to “read” pictures. A mistaken assumption is that a
person with little or no experience in seeing “foreign” illustrations can simply look at the
picture and instantly decipher what it means. “Using diagrams or illustrations in another
culture care must be given to either teach the people to read them or adapt them to their
culture” (Gudschinsky 1975: 6). Even within one’s general cultural context a picture may
hold little meaning. A person from a western culture who is adept at reading images may
not understand much of the meaning and symbolism found in paintings done during the
Renaissance period unless they have attended a fine arts course. However, the time it
takes to orient a person to “read” a picture can be less than the time it takes to instruct
someone on how to decode text.
Another important variable in picture recognition across cultures is rapid globalization coupled with urbanization. People from predominately oral cultures are becoming more exposed to images from around the world. This does not necessarily mean they can correctly interpret the images they see, but they have more familiarity with the images. The capacity and possibilities for the comic medium seem very bright in this type of environment. “Comics’ innovation in narrative has provided useful possibilities for a world increasingly dependent on image and text for much of its communication” (Dresang 1999:81).

2.2.3 Understanding Comics

In 1993, Scott McCloud published a book entitled *Understanding Comics*, which has been widely quoted among those studying comics. Rather than trying to describe what comics are like using textual description, he used the comic medium itself to illustrate how comics can communicate. In order to describe the dynamic aspect of comics he divides the “word/image” relationship into seven categories. These are: word-specific, picture-specific, duo-specific, additive, parallel, montage, and independent. The first is “word-specific” in which pictures simply illustrate but do not add significantly to the meaning given by the text. The second is “picture specific” in which the words are secondary, like background music, to the illustrations which do most of the communication. The third is “duo-specific” in which both words and images send the same message. The fourth is “additive” where one mode amplifies or elaborates on the other. Fifth is “parallel” where the text and the images are following two separate but parallel discourses. The sixth is “montage” where the text is incorporated into the image.
itself. The seventh is called “interdependent” where the images and text come together to create a larger meaning than either one could do on its own.

A critique of McCloud’s word/image taxonomy is that it focuses more on what can be done in a single panel rather than the dynamic which occurs when there are many panels combined in sequence (Cohn 2003). Cohn goes on to say that McCloud’s focus is more on the analysis of structure rather than the underlying grammatical structures and cognitive processes involved. McCloud tries to describe the dynamic of word/image being assimilated and understood by the reader as “closure” which he says is “observing the parts but perceiving the whole” (McCloud 1993:63).

2.2.4 Visual language

Neil Cohn has attempted to describe the comic medium as “visual language” rather than limiting it to a structural definition. “Visual language refers specifically to the express system(s) visually featuring combinatorial, sequential, and grammatical structures, comprehended and produced by a language group that can intuitively determine its grammaticality, and is naturally acquired and developed by children of that culture” (Cohn 2003:9). His description of visual language would encompass not only comics and comic books but also sign language. He distinguishes Japanese manga as a visual language distinct from American comic books and French bandes dessinées. Just like in spoken language, contact with other visual languages can cause modifications in the style of images (Cohn 2003).

Applying this theory in the African context, for example, Cohn’s social orientation to visual language would seem to imply that to have a truly “African visual language” Africans themselves would need to develop it and African children would be
able to understand it intuitively. This type of theory may pose fundamental problems for comics that are “translated” from one visual language to another, particularly where a localized visual language has not been previously established. Another challenge with the development of visual language, not only in the African context, but also in largely oral societies, could be the lack of a literate culture.

2.2.5 A Bridge to Literacy

There are meaning and knowledge loads that cannot be handled by illustrations alone, but an illustration can communicate quite a bit of information if a person is oriented to seeing in two dimensions. Particularly, when pictures are used to show powerful cultural symbols, they can bring to mind volumes of information. Using pictures as a medium for instruction across cultures is largely an underexploited resource. Dan Davis of SIL says, “Pictorial information processing by the brain is far more alien to traditional teaching methods than is currently acknowledged in literacy methodology” (Davis 1991:39).

Many educators have realized the affective-motivational effects of illustrations. In relation to reading, “…pictures can make reading a text more enjoyable, result in positive attitudes toward reading in general and toward illustrated text in particular, and can influence the time readers are willing to spend on a text” (Peeck and Jan 1987:416). One needs only to look at major newspapers and magazines to see that pictures attract adult readers. A current trend among adult readers in the United States is graphic novels which are available at most major bookstores. Adults and children love pictures because pictures can be so emotive and can help lighten the knowledge and meaning load that the author/illustrator is trying to convey (Gombrich 1982:162).
In societies where there is a high rate of literacy, comics are largely seen as children’s literature or a form of popular culture. “Most educators hold that the genre is best used as a bridge to more complex material” (Méndez 2004:11). Articles in the US have been written about how comics can be used to keep intermediate readers motivated to read. It is hard to know the scope of impact comic materials have had because they are not readily available on a significant scale at most schools in the US (Worthy, Moorman, Turner 1999). More and more success stories from around the US are showing the value of comics in establishing life-long readers. The following is an example.

At a high school in New York, remedial reading classes were required of students who had failed ninth-grade English the first time around. Each student had to read at least five graphic novels. A teacher pointed out that:

there wasn't a single student in this class of kids - nonreaders who don't enjoy reading - who didn't read double that number. They would read them overnight ... they were reading them at lunch, in the hallway. For the reluctant reader, they are absorbing. For the struggling reader or the reader still learning English, they offer accessibility, pictures for context, and possibly an alternate path into classroom discussions of higher-level texts. They expand vocabulary, and introduce the ideas of plot, pacing, and sequence (Méndez 2004).

The motivational aspects of combining text with pictures are well documented. “Emotion drives attention and attention drives learning” (Sylwester 1995:72).

Those who defend the comic genre have pointed out that many adolescents that went on to produce significant written works developed their love for reading through comics. Edward P. Jones, who won the 2004 Pulitzer Prize for his novel *The Known World*, admitted that he grew up reading comic books. Until he was 13, he says, he'd never read a book without a picture (Méndez 2004). "Too often comics are seen as a low
form of fiction, but that is not the case and so we should be encouraging children to read no matter what the particular format” (Schofield 2004).

### 2.3 Potential Problems with Pictures

From the comments above, there seems to be a lot going for the JSIT format. However, just because a subject matter is in this format does not automatically lead to good results. Stephen Cary points out that “pictures in comics don’t necessarily guarantee basic comprehension. The ratio of pictures to text is a factor, especially for beginning readers” (Cary 2004:59). Possible drawbacks to pictures are that they can end up usurping one’s own ability to create a mental image from the text (Hibbing and Randkin-Erickson 2003:768). The adage, “the novel is always better than the movie,” encapsulates this idea. Comics and picture books often become categorized as juvenile.

This is just right for children who have little verbal repertoire but inadequate for mature information processors as we become adults. With aging we cannot absorb sufficient information from comic books, and thus headed to prose, which consists of considerably more information (Aaron 1998).

Pictures can also do more harm than good if they aren’t placed appropriately with the corresponding text (Willows 1978:255 - 262) or if the picture does not match the reader’s expected image from the text (Hibbing and Randkin-Erickson 2003:763). Brown, who has worked extensively among oral cultures writes,

Young or unsophisticated oral communicators are often puzzled by abstract pictures, whereas they readily accept and understand realistic ones. (Abstract images are ones in which the features are generalized so that specific features need to be imagined. Examples would be watercolors in which facial features are missing, line drawings in which features are missing or disconnected, and drawings of incomplete bodies.) It is not an abstraction for an image to be symbolic or to be drawn with exaggerated features, as long as they are not grossly exaggerated. But the use of cartoon-like drawings in Scripture and Scriptural animations is problematic. Some people groups accept them if they are reasonably
realistic and not exaggerated in a comic way, but others reject them, especially if they depict prophets and other honored personalities (Brown 2004:176).

The implication is that abstract representations, including caricatures or cartoons, are not generally helpful to oral communicators. Pictures are more likely to be understood and accepted if the images are reasonably complete and realistic (Brown 2004:173-179).

2.4 Comic book use in Sub-Saharan Africa.

The phenomenon of comic books has not yet swept sub-Saharan Africa. Could this be the material that helps get Africa reading? The JSIT format might or might not fit in the African context. Then there are the cross cultural factors of using pictures in places where the pictures are not familiar. In the 1960s some general studies of pictures were done in Kenya which showed that:

1. Kenyans have difficulty in understanding sequences of pictures,
2. the inclusion of unnecessary background detail in pictures can cause confusion,
3. many Kenyans do not understand the representation of depth or perspective in pictures, and
4. Kenyans find it easier to recognize, in pictures, objects with which they are familiar rather than those with which they are not familiar (Holmes 1963).

After forty years, these findings need to be re-examined. The dynamic of globalization has, most likely, had a significant impact on these initial findings, even if the survey was largely done in rural areas. In his book *Pictures, People and Power* Linney challenges the view that one needs to stick to purely indigenous image forms. He advocates teaching people to read modern/western pictures in order to empower isolated groups to more correctly interpret the outside world and thereby have more means by
which to engage it (Linney 1995).

The United Bible Society has started distributing Biblical comics which include the stories of Moses, David, Abraham and Jesus. They have also started distributing a comic book spanning from Genesis to Revelation. The government of Benin has recognized the appeal of the comic medium and has put out several comic books on health themes such as AIDS and malaria. The USAID funded health organization AIDSCAP was able to successfully use a comic book series on a character named Emma to educate people about AIDS. So far, AIDSCAP has distributed 46,000 comics in 18 countries. The Emma comic books have been translated into French, Portuguese, Creole, Swahili and Kinyarwanda (Black 2004). Several comic artists are emerging from cities such as Libreville, Abidjan, Yaoundé, and Nairobi. There have been several exhibitions featuring African comic artists whose comic book themes tend to focus on social and health problems.

2.5 JSIT materials and Christian ministry

The field of Christian comics has proliferated to such an extent that it cannot be adequately detailed in this thesis. For this reason, only Bible Comics will be looked at with regard to Christian ministry. The use of true JSIT materials in Christianity is a fairly recent occurrence. In 1949 David C. Cook, a Christian publishing company, published Sunday PIX, a comic strip addition to their Sunday school curriculum to make the lessons more appealing. This series is still in print today. David C. Cook later incorporated many of the Sunday PIX comic strips into a 750 page book entitled The Picture Bible in 1979. It is reported that over 75 million copies have been printed in over 130 languages (http://www.christiancomicsinternational.org/series_sundaypix.html). Some of the most
recent Bible comics are collaborative efforts with many contributing artists. A good example of this is the Bible comic *The Manga Messiah* which is being distributed in Japan and throughout Asia. Other popular titles are *The Illustrated Bible* by Keith Neely and *The Lion Graphic Bible* by Mike Maddox. The latest distribution figures for The Lion Graphic Bible show over 110,000 copies sold in 17 languages in a two year period. Aside from distribution figures there is little research to show how effective these JSIT materials have been in successfully transferring biblical knowledge. The fact that the United Bible Societies and other major publishers of Bible materials have invested heavily in this medium speaks to its appeal. However, Eugene Nida cautions, “New media represents a gold mine of opportunity for effective communication of the biblical message, but without sensitive understanding of cultural differences, the theological import of the text, and the role of context, the payoff will be only fool’s gold” (Nida 1999:131).

### 2.6 The Jesus Messiah Picture Book

The Jesus Messiah picture book started out as the vision of a teenager named Willem de Vink in the Netherlands in the 1970s. He wanted to reach the youth of Europe with the stories of Jesus in the bandes dessinées (BD) format. The BD is a very popular medium throughout Europe, particularly for stories with comic, adventure and fantasy themes. Willem waited for several years before acting on his initial vision. At age 30 he quit his job as a professional graphic artist and journalist to dedicate himself to creating a comic book on the life of Jesus. He researched script and illustrations over a two-year period to assure biblical accuracy. Rather than using cartoon-like characters or caricatures, Willem drew realistic-looking characters which were representative of first
century Palestinians. He started with the story of John the Baptist at the Jordan River baptizing Jesus and selected 34 stories throughout the Gospels. Based on the New Testament Gospel accounts of the life of Jesus, particularly the books of Luke and Matthew, the stories use both direct translations from the Scriptures and paraphrase.

Because de Vink could not find a publisher that shared his vision that such a picture book could be used all over the world and that it should be published on a non-commercial basis, he decided to try to realize this independently. His family started living by the contributions of a small group of interested supporters. De Vink finally got in contact with Oswin Ramaker of Proclama, who shared his vision. Proclama took charge of production and coordination and in 1993 the first editions in Dutch, Albanian, English and French were published. As a result of the publicity, a major contribution was given which allowed for a print run of 80,000 copies of the JMPB in Albanian. Since that time, the JMPB has been translated in over 40 languages (De Vink 2005).

2.7 Making comic books cross-cultural

When introducing a comic book whose story had its origin in first century Palestine, drawn by a 20th century Western-trained artist, to another culture that is different from the former two, there may be some substantial communication challenges. Can JSIT materials that have originated in one culture be translatable to another culture? Cohn answers, “Given that Visual Languages are iconic (the signs resemble what they mean), mutual intelligibility between (most) visual languages is much higher than between verbal languages. This means translation is often less of an issue…” (personal correspondence of May 4, 2007).
Technologies are constantly improving to make the comic book medium more translator-friendly. In the past, translating a comic book was very restrictive because the sizes of the language balloons were not large enough to be able to put in more text if needed. With the JMPB there is a translation program that can be used on computers. A translator can see the image while he is translating and type directly into the speech balloon. The program shows the translator the original text in English, French, Spanish, or Dutch, as well as the Bible verses the text is based on. The speech balloons in the program are larger, allowing for more text. The program can also change the font size to fit additional text, if necessary. On average, if the Gospels (the books of Matthew, Mark, Luke and John in the New Testament) have been translated and consultant checked, it will take two weeks for an accomplished translator to put the JMPB into another language. Once the translation has been saved, there is no need for the expensive pre-production costs associated with printing comic books. The translation file can go directly to be printed.

According to several people who have used pictures in cross-cultural situations (Brown 2004, Linney 1995, Zimmer and Zimmer 1978) it is important that the pictures be fairly realistic and not caricatures. This may be a reason why the Jesus Messiah Picture Book has been translated into over 40 languages.
Chapter 3 Research and Findings

The goal of this section is to present the findings of the research done on the comprehension of material presented in JSIT and normal text-based formats. More specifically, we want to investigate whether or not the use of the JSIT format enhances comprehension of Scriptural messages. The Jesus Messiah Picture Book (JMPB) was chosen as an example of the JSIT format.

3.1 Research design

The research took place between July and September 2006 in the countries of Togo and Benin, West Africa (see maps). The Fon are the largest language group in Benin numbering approximately 1.7 million (Gordon 2005). Only Fon speakers from major urban areas were chosen. The Kabiye are the second largest language group in Togo and live mostly in rural areas. The Fon in the cities have more access to public education in French while the Kabiye in rural areas have less opportunity for public education in French. The Fon do not have a very well developed literacy program for learning their language. Those that exist are largely church-based literacy programs. The Kabiye have well developed literacy programs in their language in each of the five areas that were researched.
Map 1 Togo and Benin are situated on the West Coast of Africa.

Map 2 The five areas the Kabiye research took place in Togo.

Map 3 The two areas the Fon research took place in Benin.
Two sample groups of 90 people each (180 people total) were randomly chosen\(^1\) consisting of Fon (Benin) and Kabiye (Togo) speakers who also speak and read French.

Table 3.1 Distribution of sample among the modes of the research design

<table>
<thead>
<tr>
<th>Research Component</th>
<th>Fon</th>
<th>Fon</th>
<th>Kabiye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language of presentation</td>
<td>French</td>
<td>French</td>
<td>Fon</td>
</tr>
<tr>
<td>Modality</td>
<td>Text only</td>
<td>Picture book</td>
<td>Picture book</td>
</tr>
<tr>
<td>Sample Size</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Task 1</td>
<td>Text 1</td>
<td>PB 1</td>
<td>PB 1</td>
</tr>
<tr>
<td>Task 2</td>
<td>Text 2</td>
<td>PB 2</td>
<td>PB 2</td>
</tr>
</tbody>
</table>

Each language group has three modes which are referred to as “modality” on the far left. One mode is reading the picture book (PB) in the L1 (shaded areas), another mode is reading the PB in French and the last mode is reading text in French. The medium refers to the type of material used, in this case the JMPB, represented by the word “Comic”.

Each mode has two stories represented by the terms “PB 1” and “PB 2” or “Text 1” and “Text 2”.

3.1.1 How the subjects were chosen

The population chosen for the study were L1 speakers in Fon and Kabiye who could read in both their L1 and in French. The population was further specified as those who attended church in the language area. For each area, a list of churches was compiled, and 20 churches were randomly selected by the Minitab statistical program. To select the Fon subjects, an initial list of 76 churches was compiled from a current list of urban churches in the Atlantic department, the most populated department in Benin and which

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\(^1\) As will be explained more completely below, the sampling method used did not result in a true random sample.
includes the economic capital city of Cotonou. For choosing subjects among the Kabiye, a list of 107 rural churches in five separate regions in Togo was compiled by APSEK, a committee promoting Kabiye Scriptures. Permission to do research in selected churches was then sought from the national leaders of each denomination. After this, permission was obtained from each church pastor/priest, who furnished 10 names of those meeting the above criteria. This yielded a pool of 200 people from which 90 names were randomly chosen for inclusion in the research.

   The subjects were chosen by the pastors who had a tendency to select people with good reading abilities both in the L1 and French. For this reason, the main audience for which the JM picture book was intended (those 15 years old or younger) did not get interviewed. This is a major oversight in the research design. However, it was a pleasant surprise to find that the overwhelming majority of subjects (average age being 33 years) enjoyed reading the JMPB and some indicated that it would be good for children too.

3.1.2 Protocol for conducting the tests and interviews

   The research assistants were chosen based on their knowledge of the language (French, Fon or Kabiye) and their writing proficiency in the L1 and French. For the Fon research there were three Beninese researchers, two of them members of SIL, another an import/export broker familiar with the Fon churches in Cotonou. The Kabiye researchers were all Kabiye literacy teachers from the five areas where the research was performed in Togo. Each of the research assistants was trained to adhere to the following points for conducting the interviews:

   1. Contact the church leader and set up interview times (normally after church on Sunday or after a prayer meeting mid week);
2. If there are five or more people, have two research assistants present for the interviews.

3. Introductions with the goal of making the subject feel comfortable. Tell them whether they will be reading the JMPB or the text version of the stories.

4. Record language, age, gender, education level and reading frequency.

5. If the JMPB is used in the interview, provide a 3-minute orientation on how to read it.

6. The subject reads the first story (pages 20 & 21 in JMPB) about Jesus feeding the five thousand (3 - 5 minutes). Those doing the text version are given a one-page transcription of the story.

7. The research assistant asks the ten comprehension questions of the subject and records their responses. The subject is NOT allowed to refer to the JMPB or the text version of the story during the asking of the comprehension questions.

8. The subject reads the second story from the French text or the JMPB modes (pages 29 & 30) about Jesus raising Lazarus from the dead (4 - 6 minutes).

9. The research assistant asks the ten questions of the subject and notes their responses. Again, the subject is NOT allowed to look at the JMPB or the text version of the story during questioning.

10. The research assistant then asks the subject about his/her impressions of the JMPB if it was used in the interview.

11. The research assistant thanks the subject for his/her participation and gives each a copy of the JMPB in the language of choice.
Prior to the actual data gathering, each research assistant went through at least one practice interview which was critiqued.

3.1.3 Problems encountered during the data gathering process

The scheduling of appointments was the most challenging aspect of the data collection process. On many occasions, the research assistant would arrange a time and place to hold the interviews with the leader of the church only to have the subjects show up much later or not at all. Many interviews had to be rescheduled. The research assistants for the Kabiye research had long distances to cover for most of their interviews since their subjects were often located in remote areas. In the data collection among the Fon churches, five of the churches could not be found. These churches were replaced with other randomly chosen churches on the master list and the process of getting permission from those church leaders was re-initiated.

3.1.4 Language difficulties

The first story that was used to test reading comprehension was Jesus’ feeding of the five thousand people. Out of ten questions, four of the questions asked for a numeric response. The second story on the resurrection of Lazarus did not ask for any numeric responses. Among the Fon the average score for the first story in French was 7.683 out of 10. For the second story the average was 8.867 out of 10. Among the Kabiye the average score for the first story in French was 7.950. For the second story the average was 8.817. The presence of numeric questions proved to be problematic as we will show later. Other stories should have been chosen or different questions could have been posed for the same stories which did not require a numeric response.
3.1.5 Translation of questions

Another problem encountered was in the translation of the questionnaires both in Fon and in Kabiye. In the first story of the Fon questionnaire, the questions were not in the same sequence as in the French questionnaire. One of the questions was repeated twice (5 and 8). In the first story of the Kabiye questionnaire, question #8 was translated incorrectly. These errors could have been avoided if a back translation had been done. Since a correct answer could be given from the textual information in both the Fon and Kabiye versions of the JMPB, these questions were marked accordingly.

3.1.6 Subject preferences

In the initial research design, subjects were to be chosen to read the text-only version or the JMPB versions of the stories based on random selection. However, in practice, there was a strong preference among the subjects to read the JMPB in either French or their L1. Among the Fon subjects, it was a challenge to find people willing to read the French text version. Furthermore, those who chose to read the French text version tended to be those who had more years of formal education in comparison to those who read the JMPB. Among the Kabiye, the distribution of education among the text, French JMPB, and Kabiye JMPB modes appeared to be somewhat more uniform.

3.2 Research findings for Fon

Given that research was carried out in two different language communities in two different countries, it seemed wise to examine the two data sets separately. In this way it is then possible to compare and contrast the two cases looking for common effects as well as noting instructive differences between the two cases.
3.2.1 Subjects

The original research design called for fully random selection and assignment of subjects to the three experimental modes. In principle, the use of such a selection strategy would likely negate possible interference from such variables as education, gender, previous knowledge, reading skill, etc. In practice, it was almost impossible to apply this principle rigidly. For example, the uneven distribution of reading skills in the Fon (and Kabiye) made many subjects unwilling to read Fon-medium materials so these could not be assigned to that mode.

In the end, the assignment of readers to one of the three modes was significantly affected by the variable of reading skill (whether in French or in Fon). Not surprisingly, then, a significant portion of the analysis which follows is directed to an examination of the inter-relationship between the variable of reading skill and mode of presentation.

3.2.2 Education levels

Among the Fon subjects, educational levels ranged from no formal education up to 21 years of formal education. The median number of years of formal education among the Fon was eight. The mean level of education for participants in each mode is given in Table 3.2.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Average years of formal education in French</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon PB</td>
<td>4.9</td>
</tr>
<tr>
<td>French PB</td>
<td>9.967</td>
</tr>
<tr>
<td>French Text</td>
<td>9.1</td>
</tr>
</tbody>
</table>

Similarly, the distribution of subjects by gender is given in Table 3.3.
Table 3.3 Gender for each mode among Fon respondents

<table>
<thead>
<tr>
<th>Mode</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon PB</td>
<td>7</td>
<td>23</td>
</tr>
<tr>
<td>French PB</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>French Text</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

Clearly, there are some asymmetries in the sampling which will have to be dealt with in the analysis.

3.2.3 Test validity

Two stories were tested in order to have a comparison to see if the respondents were consistent in their responses. The second story was a control for the first story.

If comprehension is systematically impacted by the variables included in the design, we would expect to find a strong correlation between the two stories. A formal test of correlation showed that comprehension among test subjects varied systematically according to the readers’ true comprehension of the stories being read. A test for the value of $r$ found it to be highly significant ($T = 8.78; r = .648; p = .000$). Because of the high correlation, the results of the two tests were combined as a single response variable for the main analysis.

3.2.4 Item validity

In an effort to verify whether any of the questions reflected a marked difference in comprehension when presented in Fon, a Chi-square test was applied to each question in both test sets. It was suspected that there had been a problem with the Fon understanding of their language’s traditional number system and that this would manifest itself in the answers to those questions requiring a numeric response. The results showed that two of the questions from the first test set were highly irregular.
Question two of the first story asked, “How much did the disciples think it would cost to feed the crowd?”

Table 3.4 Chi-square test for question 2 of the first story

<table>
<thead>
<tr>
<th>Modality</th>
<th>Incorrect</th>
<th>Correct</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon PB</td>
<td>24</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>French PB</td>
<td>9</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>French text</td>
<td>5</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>All</td>
<td>38</td>
<td>52</td>
<td>90</td>
</tr>
</tbody>
</table>

Chi-Square = 27.419, df = 2, p = 0.000***

The respondents for the Fon PB for question two of the first story showed a marked difference (P = .000) in relation to the other modes confirming significant irregularity on this item.

Question five asked, “Jesus asked the people to sit down in groups of how many?”

Table 3.5 Chi-square test for question 5 of the first story

<table>
<thead>
<tr>
<th>Modality</th>
<th>Incorrect</th>
<th>Correct</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon PB</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>French PB</td>
<td>4</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>French text</td>
<td>5</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>All</td>
<td>37</td>
<td>34.59</td>
<td>90</td>
</tr>
</tbody>
</table>

Chi-square = 12.6, df = 2, p = .002**

Again, respondents of the Fon PB showed a marked difference in comprehension (P = .002). The Fon subjects testing for the Fon picture book had not mastered the Fon counting system. It is based on 20 units rather than 10 and has two separate ways of

---

2 In the presentation of statistical results, asterisks will be used to indicate the level of significance. The scheme is as follows: * = p < .05, ** = p < .01, *** = p < .001.
counting, one for money, and the other for non-monetary items. Rather than using the complex Fon counting system they have generally adopted the French system of counting. Because these two items were obviously defective, scores on these two items were removed from the entire data set to eliminate this artificial source of variation.

The following table provides a statistical summary showing what happened before and after the questions were taken out of the data set.

Table 3.6 Statistical summary of original data set as compared with revised data set

<table>
<thead>
<tr>
<th></th>
<th>All modes</th>
<th>French modes</th>
<th>Fon PB mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>$r = .648, T = 7.98$</td>
<td>$r = .684, T = 7.137$</td>
<td>$r = .64, T = 4.406$</td>
</tr>
<tr>
<td></td>
<td>df = 89, p = .000***</td>
<td>df = 59, p = .000***</td>
<td>df = 29, p = .000***</td>
</tr>
<tr>
<td>After</td>
<td>$r = .646, T = 7.927$</td>
<td>$r = .672, T = 6.896$</td>
<td>$r = .585, T = 3.813$</td>
</tr>
<tr>
<td></td>
<td>df = 89, p = .000***</td>
<td>df = 59, p = .000***</td>
<td>df = 29, p = .001**</td>
</tr>
</tbody>
</table>

The correlation between the adjusted first story outcomes with the second story averages came to .59. This level of correlation is statistically significant showing that comprehension performance on the two tests was very similar.

3.2.5 Revised comprehension levels for first story

With questions two and five removed from the data set a partial ANOVA shows comprehension levels for each of the reading modes for the first story.
The Fon and French PB modes outperform the French text mode in the second story. However, there is not a statistically significant difference between the comprehension levels for mode in the second story (F = 0.44; df = 2.87; p = 0.646). They are almost identical. Based on this evidence, scores from the two tests were combined into a single measure for subsequent analysis.

**3.2.6 Analysis of the Fon data**

The research being reported here was designed to test the hypothesis that presentation of reading material in a comic book format would enhance comprehension of the material presented. The data also allows for testing of hypotheses about language of presentation, although this was not the primary focus of the study. Reading comprehension is the primary response variable used in the study to test the communicative effectiveness of two contrasting types of literature. It is well established, however, that the variable of reading comprehension is, itself, subject to the influence of a range of other variables including education, difficulty of material being read, amount of practice in actual reading, personal maturation, and innate aptitude, to name a few.

For this reason and because of the already identified problem in sampling, a full
understanding of the data gathered has required that the analysis of each data set proceed on two levels:

1) A direct comparison of comprehension according to the modes of presentation and;

2) A deeper or more refined analysis which seeks to control for the effects of the various independent variables which are suspected of confounding the data gathered during the research process.

Because two items (out of ten) were removed from the first story, the mean score for each mode on the first story is well below the corresponding mean for the second story. Nonetheless, comparing the patterns of performance for the first story is almost identical to that of the second story.
3.2.5 Analysis of mode of presentation in the Fon data

The box plot graph below gives a good initial comparison of the levels of comprehension between the three modes of presentation.

![Box plot of comprehension in all 3 modes](image)

Several observations can be made from this graph. First, the French PB mode had the highest level of comprehension. Second, the French text mode had the greatest scatter, or range, indicating that respondents’ comprehension was more likely to vary. Third, the Fon PB mode had the tightest clustering of readers reading at a high level of comprehension.

A direct comparison of all three modes using a one-way ANOVA for levels of comprehension provides a statistical measure of the difference between the modes.
Table 3.8 Comprehension levels between all modes for the Fon data

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>2</td>
<td>10.87</td>
<td>5.43</td>
<td>0.83</td>
<td>0.441</td>
</tr>
<tr>
<td>Error</td>
<td>87</td>
<td>571.53</td>
<td>6.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>582.40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Individual 95% CIs For Mean Based on Pooled StDev

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>95% CIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon PB</td>
<td>30</td>
<td>15.3003</td>
<td>2.120</td>
<td>14.40 – 15.40</td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>15.567</td>
<td>2.788</td>
<td>15.10 – 16.00</td>
</tr>
<tr>
<td>French Text</td>
<td>30</td>
<td>14.733</td>
<td>2.728</td>
<td>14.10 – 15.30</td>
</tr>
</tbody>
</table>

Pooled StDev = 2.563

In the initial analysis the French PB provided a higher level of comprehension than the Fon PB and French text modes. However, the difference in comprehension between the three modes was not statistically significant (F = .83; df 2.87; p = .441). At this first level of analysis we are led to conclude that the mode of reading had no statistically significant bearing on the Fon respondents’ level of understanding.

3.2.7 French PB and French Text

The major hypothesis underlying the research being presented here is that those reading the picture book version will outperform the text version of the same story. The inclusion of two test modes which vary only by mode of presentation provides a means of directly testing this hypothesis. Breaking down the comparison between those reading the French PB and those reading the French text, the results show that the mean total scores for those reading the French PB were 15.567 as opposed to 14.733 for those reading text. While the French PB outperformed the text version, a one-way ANOVA showed that the difference between these two scores was not statistically significant (F = 1.37; df 1.58; p = .247). These data again fail to support our major hypothesis.

3 The mean, here, is based on a combined score for the two texts read by each reader.
3.2.8 Fon PB and French PB

This comparison will show if there is a significant difference between the use of the Fon language (the mother tongue) and the French language in the reading of the picture book. A one-way ANOVA was computed with the following results:

Table 3.9 Comprehension levels between French and Fon picture books

<table>
<thead>
<tr>
<th>Analysis of Variance for Comp2</th>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>1</td>
<td>1.07</td>
<td>1.07</td>
<td>0.17</td>
<td>0.678</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>58</td>
<td>355.67</td>
<td>6.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>356.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Individual 95% CIs For Mean Based on Pooled StDev

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
</tr>
</thead>
<tbody>
<tr>
<td>FonPB</td>
<td>30</td>
<td>15.300</td>
<td>2.120</td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>15.567</td>
<td>2.788</td>
</tr>
</tbody>
</table>

Pooled StDev = 2.476

The French PB (15.567) and Fon PB (15.3) show almost equal levels of comprehension. Thus, the initial analysis provided little support that presentation of material in the mother tongue conferred an advantage in terms of comprehension of the text (F = .17, P = .678).

Even though there are some promising indications that the PB modes provided better levels of comprehension than the text mode, the tests did not find a statistically significant difference between modes. However, a further analysis of the characteristics of the samples participating in each mode sheds further light on the impact of the differing modes of presentation.

3.2.9 A closer look at the data

This section looks at some of the independent variables that were acting on the variable of comprehension. Specifically, we will be looking for evidence that one or more of the independent variable included in the research study correlates (covaries) with the variable of comprehension. If we find evidence that a given independent variable
correlates with comprehension AND if we also find that the same independent variable is not evenly distributed in our sample, then we are forced to consider the possibility that the preliminary analysis has given us a distorted or incomplete picture of the ‘real’ relationship between mode and comprehension.

3.2.9.1 Education

The education levels among the Fon subjects ranged from having no formal education to 21 years of formal education. The average number of years of formal education for the 90 subjects was 8.13. In Table 3.10, the level of education for the subjects in each mode is broken down by language. We notice immediately the large difference in mean education among Fon readers versus those who read the French materials.

Table 3.10 Mean number of years of education of subjects in the modalities by language

<table>
<thead>
<tr>
<th>Language of reading</th>
<th>Number of subjects</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon</td>
<td>30</td>
<td>5.067</td>
</tr>
<tr>
<td>French</td>
<td>60</td>
<td>9.667</td>
</tr>
</tbody>
</table>

Those who read the French modes had about twice the education of those reading the Fon PB. Those reading the French PB had almost a year’s educational advantage over those who read the French text. There is a possible explanation for the educational disparity between those from the Fon PB and respondents from the other modes. The researchers tried to randomly distribute the subjects among the modes. However, some subjects were allowed to choose the mode they desired, particularly in the initial stages of the research. Respondents who were less educated tended to choose the Fon BP. These respondents may also have felt more confident in reading Fon in relation to reading French since they had taken some Fon literacy classes.
Given the large disparity in educational experience between those reading the Fon PB and the two French modes, we are forced to investigate whether education may be a factor in explaining levels of comprehension in the overall research study.

3.2.9.2 Gender

An examination of the distribution of subjects by gender shows that this was another source of asymmetry. Table 3.11 shows the distribution of subjects by gender among the three modes. A Chi-square test of the distribution of subjects is statistically significant ($x^2 = 12.759; df = 2; p = .002$) indicating that the distribution of participants in the 3 modes by gender was not random. If we also find that gender interacts with the variable of comprehension (or one of the other independent variables) we will be forced to also include this variable in a more careful analysis of the data.

Among the Fon subjects there were 53 females and 37 males. Of those reading the Fon PB there were 7 males and 23 females. This is a significant difference at $p = .015$.

Table 3.11 Number of males and females reading in French and Fon

<table>
<thead>
<tr>
<th></th>
<th>Fon</th>
<th>French</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>23</td>
<td>30</td>
<td>53</td>
</tr>
<tr>
<td>Males</td>
<td>7</td>
<td>30</td>
<td>37</td>
</tr>
<tr>
<td>All</td>
<td>30</td>
<td>60</td>
<td>90</td>
</tr>
</tbody>
</table>

Chi-Square = 5.875; df = 1; $p = 0.015^*$

The significance of this difference is that less formally educated women were more willing to read the Fon PB than the other modes. Furthermore, females are likely to have fewer years of education than their male peers. Women could also tend to be more available for or more likely to attend evening literacy courses in Fon than men.
3.2.9.3 Gender and education

Across sub-Saharan Africa, it is normal to find male children receiving more education than female children. This was true in the Fon data as well.

Table 3.12 Average years of formal education between males and females

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>7.170</td>
</tr>
<tr>
<td>Males</td>
<td>9.162</td>
</tr>
<tr>
<td>Both</td>
<td>7.989</td>
</tr>
</tbody>
</table>

F = 3.58; p = .062

Males had a mean of over two years’ additional formal education than females. The difference in education levels between men and women is slightly significant (F = 3.58; p = .062). These data suggest that the variable of gender will also have to be taken into account in fully understanding the data.

3.2.9.4 Reading Frequency

Subjects were asked how many times per week they read on average. It was suspected that the amount a person reads per month might have a significant impact on explaining levels of comprehension. The possible responses were: once a week, two or three times a week, and every day. This tabulated out to the numbers 4, 12, and 30 to describe the number of times per month the subject read. There were some slight variations in the numbering with two people giving “24” as an answer, two giving “8”, and one responding with “10” as an answer.

For all subjects, the average reading frequency was 23 days out of each month. The following shows the breakdown from each group of readers:
Table 3.13 Average number of days per month readers in each mode practiced reading

<table>
<thead>
<tr>
<th>Group (mode)</th>
<th>Mean reading frequency (per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon PB</td>
<td>22.8</td>
</tr>
<tr>
<td>French PB</td>
<td>25.2</td>
</tr>
<tr>
<td>French text only</td>
<td>23.3</td>
</tr>
</tbody>
</table>

The mean number of days reading per month seems to correlate somewhat with the respective levels of comprehension of each mode. The group correlation is .60 which is high but not statistically significant since there are only three groups.

3.2.9.5 Age

The ages of the Fon subjects ranged from 15 to 74. The following chart show the average age between males and females.

Table 3.14 Average age of males and females

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>53</td>
<td>37.42</td>
<td>36.0</td>
<td>12.43</td>
</tr>
<tr>
<td>Male</td>
<td>37</td>
<td>34.59</td>
<td>31.0</td>
<td>12.10</td>
</tr>
</tbody>
</table>

Observing the median age, female subjects were on average 2.8 years older than the male subjects. The difference, however, was not statistically significant.

3.2.9.6 Correlation between comprehension and independent variables

If there is a significant correlation between any of the independent variables tracked in the study (education, age, gender, reading frequency) and the dependent variable (comprehension, in this case), then it will be necessary to further analyze the data in light of such correlations. The following investigations were carried out to determine whether or not such analysis was necessary.
Across the entire Fon sample there is a statistically significant correlation between years of education and level of comprehension (r = .226; t = 2.176; df = 89; p = .0038).

Among those in the Fon data set who participated in one of the French modes there is a statistically significant correlation between years of education and level of comprehension (r = .359; t = 2.93; df = 59; p = .0069).

Across the entire Fon sample, there is a statistically significant correlation between reading frequency and comprehension (r = .263; t = 2.557; df = 89; p = .016).

These findings require that the Fon data be further analyzed in an effort to better understand the relationship between the variables of interest in the study (mode of presentation, comprehension).

3.2.10 Refined analysis for Fon

In this section a deeper analysis of the Fon data will be presented in an effort to better understand the relationship between the research variables. In particular, we want to try to determine whether the various intervening variables such as age, gender, and years of education affected the levels of comprehension in the research study. This section largely utilizes t-tests, regression analyses and general linear models to test covariates as they relate to comprehension in the different modes.
Table 3.15 General Linear Model (GLM) statistical summary of all 3 modes with comprehension as the response variable

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>F = 8.48</td>
<td>p = .005**</td>
</tr>
<tr>
<td>Age</td>
<td>F = .46</td>
<td>p = .501</td>
</tr>
<tr>
<td>Gender</td>
<td>F = 4.10</td>
<td>p = .046*</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>F = 7.85</td>
<td>p = .006**</td>
</tr>
</tbody>
</table>

The above table shows the covariates tested separately with comprehension as the response variable and mode as a grouping variable. Education and reading frequency show up as highly significant covariates with gender also being slightly significant. Age does not appear to be a factor acting on comprehension.

3.2.10.1 Comparing the picture book modes

Table 3.16 Statistical summary for the Fon and French PB modes

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>F = 3.06</td>
<td>p = .086</td>
</tr>
<tr>
<td>Age</td>
<td>T = -.50</td>
<td>p = .622</td>
</tr>
<tr>
<td>Gender</td>
<td>F = 1.59</td>
<td>p = .212</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>F = 5.90</td>
<td>p = .018*</td>
</tr>
</tbody>
</table>

This suggests that the observed impact of gender is really an artifact of education rather than gender per se. Reading frequency remains the most salient variable over formal years of education. This may help to explain why the less-educated respondents for the Fon PB did almost equally well as the higher-educated respondents for the French PB.
The Fon PB and French PB were tested with comprehension as the response variable and the covariates of education, gender, age, reading frequency (RF), and language material (LM).

Table 3.17 GLM with comprehension as the response variable and education, gender, age, reading frequency and language mode as covariates

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Adj MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1</td>
<td>8.969</td>
<td>5.61</td>
<td>0.021</td>
</tr>
<tr>
<td>Gender-N</td>
<td>1</td>
<td>2.963</td>
<td>1.85</td>
<td>0.179</td>
</tr>
<tr>
<td>Age-Num</td>
<td>1</td>
<td>0.902</td>
<td>0.56</td>
<td>0.456</td>
</tr>
<tr>
<td>RF</td>
<td>1</td>
<td>21.170</td>
<td>13.25</td>
<td>0.001</td>
</tr>
<tr>
<td>LM</td>
<td>1</td>
<td>0.009</td>
<td>0.01</td>
<td>0.941</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>1.598</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>130.546</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In this GLM with all covariates included in the model, reading frequency (F = 13.25, P = .001) stays the most significant variable with education (F = 5.61, P = .021) significant as well. Age and gender are not statistically significant but gender does appear to explain some of the variance. Language used (LM) seems to have little statistical significance on comprehension (p = .941). From these figures, it can be deduced that the practice of reading was supremely important in assuring a better level of understanding. Education is also significant but the fact that reading frequency was more significant shows that practicing reading is very important in assuring understanding. When these factors are included in the model, the language of presentation makes no difference when the mode of presentation was PB.

3.2.10.2 Looking at the French modes

This comparison is important in validating the thesis. The only true comparison between the PB and text modes is in French.
Table 3.18 Statistical summary for French

<table>
<thead>
<tr>
<th></th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (Correlation)</td>
<td>r = .401,</td>
<td>p = .002***</td>
</tr>
<tr>
<td>Age (ANOVA)</td>
<td>F = .77</td>
<td>p = .466</td>
</tr>
<tr>
<td>Gender (T-test)</td>
<td>T = -1.32</td>
<td>p = .193</td>
</tr>
<tr>
<td>Reading frequency (Correlation)</td>
<td>r = .254,</td>
<td>p = .050*</td>
</tr>
</tbody>
</table>

Table 3.18 clarifies the impact of the various independent variables on reading comprehension when material is presented in French. Gender and age do not appear to be statistically significant. The correlation between reading frequency and comprehension is right at being statistically significant. Finally, we see that comprehension in French is largely dependent on the number of years of formal education.

Comprehension levels in this subpopulation are closely related to education. In the French modes those with more education had better comprehension regardless of whether they were reading the French text or the French PB version of the story. Since the subjects were operating in a second language this may have had a leveling effect so that gender did not show up as a significant variable.

3.2.10.3 Looking at the Fon mode

Table 3.19 Statistical summary for Fon

<table>
<thead>
<tr>
<th></th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (Correlation)</td>
<td>r = .083</td>
<td>p = .665</td>
</tr>
<tr>
<td>Age (ANOVA)</td>
<td>F = 1.32</td>
<td>p = .286</td>
</tr>
<tr>
<td>Gender (T-test)</td>
<td>T = 1.34</td>
<td>p = .198</td>
</tr>
<tr>
<td>Reading frequency (Correlation)</td>
<td>r = .474,</td>
<td>p = .008***</td>
</tr>
</tbody>
</table>
The Fon language table is quite a contrast to the French language table. Reading frequency is the most salient variable as opposed to formal education in French. Three times as many females as males read Fon. Since their average education was significantly less than the readers in French this indicates that these women had developed their reading skill primarily from personal practice in reading.

3.2.10.4 Correlation for education and reading frequency across all modes

Table 3.20 Correlation for education and reading frequency for all 3 modes

<table>
<thead>
<tr>
<th></th>
<th>Fon PB</th>
<th>French PB</th>
<th>French Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension versus Education</td>
<td>( r = .083 ) ( p = .664 )</td>
<td>( r = .514 ) ( p = .004 )**</td>
<td>( r = .514 ) ( p = .004 )**</td>
</tr>
<tr>
<td>Comprehension versus Reading frequency</td>
<td>( r = .474 ) ( p = .008 )**</td>
<td>( r = .331 ) ( p = .072 )</td>
<td>( r = .1414 ) ( p = .454 )</td>
</tr>
</tbody>
</table>

In the Fon PB column there is a strong correlation between reading frequency (\( p = .008 \)) and comprehension but a very week correlation between education and comprehension. The implication is that proficiency in Fon does not come from formal education but from reading practice. The data for the French PB is the opposite. There is a strong correlation between years of education and comprehension (\( p = .004 \)).

3.2.11 Conclusions for Fon analysis

The major hypothesis of the study is not supported by the Fon data. In Table 3.17 we note that the variable of mode of presentation (PB vs. Text) is almost totally neutralized after we control for the affect of the variables of education, reading frequency, and gender. Two of the variables, however, behave very differently depending on the language of presentation. Comprehension of the text material (within the PB or text mode) is heavily influenced by level of education when this material is read in
French. Conversely, when material is presented in Fon, the mother tongue of most subjects in the study, education has minimal impact while reading practice has a much stronger impact. The implications of these findings will be further explored in chapter 6.

3.3 Kabiye analysis

3.3.1. Subjects

The Kabiye of Togo were chosen to participate in this study because they are a major language group in Togo and are largely based in a rural region. The New Testament of the Bible has been available to them since 1996. They have a positive view of their language and a strong identity as a social-cultural group.

3.3.1.1 Gender

An oversight in the subject selection was in not assuring there would be an equal number of male and female respondents. The distribution of gender was also less balanced in the Kabiye sample as it was in the Fon sample. Unlike the ratio of gender among the Fon, there were more males (59) than females (31) in the Kabiye sample.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kabiye PB</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>French PB</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>French Text</td>
<td>24</td>
<td>6</td>
</tr>
</tbody>
</table>

Chi-square = 6.003; p = .0492

3.3.2. Test validity

As a first step in verifying the validity of the two tests, a correlation was computed for the two tests. The results indicate that there was strong correlation between
the two tests ($T = 5.58; \ df = 89; \ r = .511; \ p = .000$). The strength of correlation supports the assumption that both tests were measuring real comprehension.

As in the Fon data, each question was tested to see if there were any anomalies. Question eight in the first story among those reading the Kabiye PB had significantly lower scores than those reading in the French modes.

Table 3.22 Chi square test on question 8 in the first story

<table>
<thead>
<tr>
<th>Mode</th>
<th>Num. Incorrect</th>
<th>Num. Correct</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>French PB</td>
<td>2</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>French Text</td>
<td>5</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Kabiye PB</td>
<td>23</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>60</td>
<td>90</td>
</tr>
</tbody>
</table>

Chi-Square = 38.700; df = 2; p = 0.000

Since respondents in the Kabiye PB mode had difficulty with this question while none of the others did, this indicated a possible translation problem. Further checking indicated that the Kabiye question had been incorrectly translated from the French questionnaire. The question posed in French was, “What did the people want Jesus to become for them?” The correct response from the text was “their king”. The Kabiye translation was, “Why did the people want to make Jesus their King?” The Kabiye translator had mistakenly given the answer in the question and formulated another question. For this reason question eight was taken out of the data set for the subsequent analysis. A comparison of the adjusted first story and the second showed a correlation of .495 with a value of $p = .000$. Despite the slight reduction in the correlation, the correlation remains highly significant.
The eighth question in the second story questionnaire proved difficult for all modes (see Table 3.23). This question asked, “Why did Jesus raise Lazarus from the dead?” It is not clear why this question caused problems for the Kabiye respondents. Perhaps they were reading in anticipation of the next event (the resurrection of Lazarus) and skimmed over the text which would have helped them answer this question.

Table 3.23 Chi-square test on question 8 of the second story

<table>
<thead>
<tr>
<th>Mode</th>
<th>Num. Incorrect</th>
<th>Num. Correct</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>French PB</td>
<td>20</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>French Text</td>
<td>23</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Kabiye PB</td>
<td>26</td>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>21</td>
<td>90</td>
</tr>
</tbody>
</table>

Chi-Square = 3.354; df = 2; p = 0.187

Statistically, however, variation in performance across modes was not significant (Chi-square = 3.354; p = 0.187). The question was not discarded but its apparent level of difficulty should be noted.

The revised results of the first story show that there was very little difference in comprehension between modes. However, there is a larger difference between the first and second stories (Table 3.24).
Table 3.24 Profile of comprehension levels for the two stories

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Story</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>7.300</td>
<td>(*)</td>
</tr>
<tr>
<td>French Text</td>
<td>30</td>
<td>7.333</td>
<td>(*)</td>
</tr>
<tr>
<td>Kabiye PB</td>
<td>30</td>
<td>7.333</td>
<td>(*)</td>
</tr>
<tr>
<td>Second Story</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>8.300</td>
<td>(*)</td>
</tr>
<tr>
<td>French Text</td>
<td>30</td>
<td>8.233</td>
<td>(*)</td>
</tr>
<tr>
<td>Kabiye PB</td>
<td>30</td>
<td>8.967</td>
<td>(*)</td>
</tr>
</tbody>
</table>

3.3.3 General results among the Kabiye.

In this section general statistics on comprehension results on the Kabiye data will be presented. As in the case of the Fon data, we will be looking for evidence that the Picture Book mode of presentation enhances comprehension of the material being read. The statistics reported were done on combined scores for the two tests.
At first glance, all three modes look fairly even as far as levels of comprehension is concerned. There were a couple of outliers (*) in the data set. One was a French PB respondent and another was a French Text respondent. There is no outlier for the Kabiye PB. Also many of the respondents for the Kabiye PB scored in the top quartile (top line).

A one way ANOVA shows the statistical relationship between these modes.

Table 3.25 Adjusted comprehension totals for each mode

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>2</td>
<td>10.29</td>
<td>5.14</td>
<td>0.90</td>
<td>0.409</td>
</tr>
<tr>
<td>Level</td>
<td>N</td>
<td>Mean</td>
<td>StDev</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>15.600</td>
<td>2.774</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French Text</td>
<td>30</td>
<td>15.567</td>
<td>2.661</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kabiye PB</td>
<td>30</td>
<td>16.300</td>
<td>1.512</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Those reading the Kabiye PB had better comprehension than those reading the French modes. The difference in comprehension levels between these three modes, however, was not statistically significant at p = .409. If the thesis of the picture books out-performing text had been correct then we would have expected that both the Kabiye PB and the French PB would have done significantly better than the French text mode.

3.3.4 The independent variables and their impact on comprehension

As in the Fon case, evidence of asymmetries in the sample in combination with interactions between the dependent and independent variables will constitute evidence that a complete analysis will be necessary to fully understand these interactions.

3.3.4.1 Gender

Among the Kabiye subjects there were 31 females and 59 males. Of those reading the Kabiye picture book, 15 were male and 15 were female. There were 10 females and
20 males reading the French picture book and 6 females and 24 males reading the French text.

Table 3.26 Chi-square: Gender vs. Mode

<table>
<thead>
<tr>
<th>Gender</th>
<th>French PB</th>
<th>French Text</th>
<th>Kabiye PB</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>10</td>
<td>6</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>24</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>All</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>90</td>
</tr>
</tbody>
</table>

Chi-Square = 6.105; df = 2; p = 0.047

In Table 3.26 we see that gender was not evenly distributed for the French modes. The French text mode had low participation of females while the Kabiye PB was equally split between male and female.

Table 3.27 T-test: Gender vs. Education

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>31</td>
<td>7.94</td>
<td>3.20</td>
<td>.58</td>
</tr>
<tr>
<td>Male</td>
<td>59</td>
<td>9.42</td>
<td>2.75</td>
<td>.36</td>
</tr>
</tbody>
</table>

T-Value = -2.20; df = 53; p = 0.032

Since we can see from Table 3.26 that gender was not evenly distributed among the modes, it is reasonable to investigate whether any of the major independent variables varied by gender. In Table 3.27 we find evidence that gender and education interact, with females having more than a year less education than males, a difference which is statistically significant (T = 2.20; df = 53; p = .032).

Finally, in Table 3.28 we find the results of a correlation between comprehension and education. Their correlation is highly significant (p = .000).
Table 3.28 Correlation between Education and Comprehension

\[
\begin{align*}
& r = .437 \\
& T = 4.56; \text{df} = 89; \ p = 0.000***
\end{align*}
\]

Taken together these three tests provide evidence that there are significant asymmetries in the Kabiye sample as well as interaction between key variables. Therefore, a detailed analysis will be required to fully understand the interaction between mode of presentation and comprehension.

3.3.4.2 Age

The range of age among the Kabiye subjects was 16 to 65. The average age among the subjects was 29.6. Below is a breakdown of the average ages by mode:

Table 3.29 Average age of respondents by mode

<table>
<thead>
<tr>
<th>Analysis of Variance for Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
</tr>
<tr>
<td>Mode</td>
</tr>
<tr>
<td>Level</td>
</tr>
<tr>
<td>French PB</td>
</tr>
<tr>
<td>French Text</td>
</tr>
<tr>
<td>Kabiye PB</td>
</tr>
<tr>
<td>Pooled StDev</td>
</tr>
</tbody>
</table>

The variable of age does not appear to be a factor at the p = .511 level.

3.3.4.3 Education levels

The education levels among the Kabiye subjects ranged from having no formal education to 16 years of formal education. The average number of years of formal education of the 90 subjects in the study was 8.9.

In Table 3.30, education is broken down according to the modalities of the study.
Table 3.30 Average years of formal education in French for each mode

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>2</td>
<td>49.76</td>
<td>24.88</td>
<td>2.92</td>
<td>0.059</td>
</tr>
<tr>
<td>Level</td>
<td>N</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>9.167</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French Text</td>
<td>30</td>
<td>9.667</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kabiye PB</td>
<td>30</td>
<td>7.900</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The respondents for the Kabiye PB (mean = 7.9 years) had an average of a little over one year less formal education than those reading the French PB (mean = 9.167 years) and one and a half years less formal education than those reading the French text (mean = 9.667 years). Variation in education levels among the three modes was just shy of being statistically significant (P = .059). Evidently, the sampling design used in the study worked better in the case of the Kabiye than it did among the Fon. One reason for this is that the questionnaires for each mode had to be equally distributed among the five different regions where the Kabiye lived in rural Togo.

### 3.3.4.4 Reading frequency

Subjects responded to a question about how many times per week they read. This could be reading in any language with any level of reading materials. The average responses fell into three categories of 4, 12, and 30 times per month. The reading frequency average was 22.56 days per month for all subjects. Below is the monthly average for each mode:
Table 3.31 Average number of days per month readers in each mode practiced reading

<table>
<thead>
<tr>
<th>Group (mode)</th>
<th>Mean reading frequency (per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kabiye PB</td>
<td>22.53</td>
</tr>
<tr>
<td>French PB</td>
<td>23.20</td>
</tr>
<tr>
<td>French text only</td>
<td>21.93</td>
</tr>
</tbody>
</table>

3.3.4.5 Comparison of French modes

Table 3.32 One-way ANOVA of the two French modes

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>1</td>
<td>0.02</td>
<td>0.02</td>
<td>0.00</td>
<td>0.962</td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td>N</td>
<td>Mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French PB</td>
<td>30</td>
<td>15.600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French Text</td>
<td>30</td>
<td>15.567</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A comparison of the two French language modes gives us an opportunity to observe whether the JSIT format significantly aids comprehension. A comparison of comprehension between these modes using a one-way ANOVA shows them to be virtually identical ($F = .00$, df $= 1/58$, $p = .962$). Is this lack of difference fundamental or are we being mislead by the effect of other variables?

When respondents of the French PB are compared with those reading the French text, the difference in educational level by gender was quite pronounced.

Table 3.33 Average years of education in French among male and female respondents for the French modes

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Mean</th>
<th>St. Deviation</th>
<th>SE Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>16</td>
<td>7.81</td>
<td>2.54</td>
<td>.63</td>
</tr>
<tr>
<td>Male</td>
<td>44</td>
<td>10</td>
<td>2.44</td>
<td>.37</td>
</tr>
</tbody>
</table>

$T$-Value = -2.98; df = 25; $p = 0.006**$
Males reading in the French modes had significantly more education than did females reading in the French modes. Male subjects (mean = 10 years) in the French data have over two more years of education on average than do females (mean = 7.8 years). This is statistically significant at the p = .006 level. This meant that if there were more male respondents in the French modes than female respondents the educational level of this group is likely to be elevated.

3.4 Refined analysis for Kabiye

As in the Fon data, a deeper analysis of the Kabiye data will be presented to better understand the relationship between the research variables. Specifically, we want to determine if various intervening variables such as age, gender, and years of formal education (in French) affected the levels of comprehension in the research study.

Table 3.34 Impact of each independent variable between all 3 modes

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>F = 27.59</td>
<td>p = .000***</td>
</tr>
<tr>
<td>Age</td>
<td>F = 2.66</td>
<td>p = .323</td>
</tr>
<tr>
<td>Gender</td>
<td>F = 7.18</td>
<td>p = .009**</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>F = 2.99</td>
<td>p = .087</td>
</tr>
</tbody>
</table>

Education and gender show up as statistically significant variables. Reading frequency also seems to account for some of the variation but we will verify this in the next GLM (Table 3.35) which incorporates all covariates and how they act in relation to one another on the dependent variable of comprehension.
Table 3.35 General linear model statistical summary of all 3 modes with comprehension as the response variable

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Seq SS</th>
<th>Adj SS</th>
<th>Adj MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1</td>
<td>96.672</td>
<td>80.049</td>
<td>80.049</td>
<td>18.78</td>
<td>0.000***</td>
</tr>
<tr>
<td>RF</td>
<td>1</td>
<td>5.372</td>
<td>3.127</td>
<td>3.127</td>
<td>0.73</td>
<td>0.394</td>
</tr>
<tr>
<td>Gender-N</td>
<td>1</td>
<td>8.311</td>
<td>16.275</td>
<td>16.275</td>
<td>3.82</td>
<td>0.054</td>
</tr>
<tr>
<td>Age</td>
<td>1</td>
<td>0.098</td>
<td>0.000</td>
<td>0.000</td>
<td>0.00</td>
<td>0.994</td>
</tr>
<tr>
<td>Mode</td>
<td>2</td>
<td>40.991</td>
<td>40.991</td>
<td>20.495</td>
<td>4.81</td>
<td>0.011*</td>
</tr>
<tr>
<td>Error</td>
<td>83</td>
<td>353.711</td>
<td>353.711</td>
<td>4.262</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>505.156</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.35 shows each major independent variable tested together with comprehension as the response variable. Education and mode are highly significant covariates with gender having some impact but just outside of being statistically significant. Interestingly, reading frequency does not show up as statistically significant in the Kabiye data as opposed to the Fon results in which this variable was statistically significant. Age had almost no impact on comprehension in relation to the other covariates.

3.4.5.1 Comparison of the French modes

Table 3.36 Analysis of the independent variable upon the two French modes

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>F = 9.18</td>
<td>p = .004**</td>
</tr>
<tr>
<td>Age</td>
<td>F = .13</td>
<td>p = .717</td>
</tr>
<tr>
<td>Gender</td>
<td>F = 2.76</td>
<td>p = .102</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>F = .37</td>
<td>p = .544</td>
</tr>
</tbody>
</table>

As in the Fon data, the results for the two French modes among the Kabiye show education as a highly significant variable. Reading frequency is even less significant than it was in the comparison between all three modes. Gender was slightly more significant.
here than in the same comparison among the Fon respondents in the French modes (see Table 3.16). This is to be expected since the subject sample was done in rural areas, meaning that more males than females attend schools in French.

Education actually becomes more significant when the covariate of reading frequency was added to the model. Reading frequency became less significant in relation to education. This is curious in relation to the results from the Fon analysis, where reading frequency was statistically more significant than education. There are several possible explanations for this. First, the responses by the subjects about reading frequency may not have been accurate. Second, the higher rate of males (who exhibited a higher level of education than females) among the Kabiye may have had more influence on comprehension levels. Thirdly, only years of formal education in the French were measured. The number of years of informal education through local literacy classes, exposure to Kabiye Scriptures in a church environment or other types of learning were absent from the data.

Table 3.7 General linear model for the French modes

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Seq SS</th>
<th>Adj SS</th>
<th>Adj MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1</td>
<td>98.308</td>
<td>52.792</td>
<td>52.792</td>
<td>9.18</td>
<td>0.004**</td>
</tr>
<tr>
<td>RF</td>
<td>1</td>
<td>2.964</td>
<td>2.140</td>
<td>2.140</td>
<td>0.37</td>
<td>0.544</td>
</tr>
<tr>
<td>Gender-N</td>
<td>1</td>
<td>14.038</td>
<td>15.890</td>
<td>15.890</td>
<td>2.76</td>
<td>0.102</td>
</tr>
<tr>
<td>Age</td>
<td>1</td>
<td>0.405</td>
<td>0.765</td>
<td>0.765</td>
<td>0.13</td>
<td>0.717</td>
</tr>
<tr>
<td>M</td>
<td>1</td>
<td>2.319</td>
<td>2.319</td>
<td>2.319</td>
<td>0.40</td>
<td>0.528</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>310.550</td>
<td>310.550</td>
<td>5.751</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>428.583</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When all variables are controlled, there is no statistically significant difference between the French PB mode and the French text mode. This provides further evidence that mode of presentation (JSIT) does not enhance comprehension (in the Kabiye area).
Education remains the most, and only, significant variable in explaining variation in the sample.

3.4.5.2 Comparing the picture book modes

Table 3.38 Analysis of the independent variable upon the PB modes

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>F = 14.17</td>
<td>P = .000***</td>
</tr>
<tr>
<td>Age</td>
<td>F = 1.59</td>
<td>P = .213</td>
</tr>
<tr>
<td>Gender</td>
<td>F = 2.65</td>
<td>P = .109</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>F = 2.00</td>
<td>P = .163</td>
</tr>
</tbody>
</table>

Again, education is the most salient covariate in the PB modes. As in the Fon data, there is an observed impact of gender which is an artifact of education. Unlike the Fon data, reading frequency’s impact is not statistically significant.

Since Kabiye respondents read better in their L1 as opposed to the French PB mode, a comparison between education and language with the constant of comprehension was done.

Table 3.39 General linear model with comprehension as the response variable and education and language as the covariates

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Seq SS</th>
<th>Adj SS</th>
<th>Adj MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1</td>
<td>46.656</td>
<td>42.353</td>
<td>42.353</td>
<td>10.62</td>
<td>0.002**</td>
</tr>
<tr>
<td>RF</td>
<td>1</td>
<td>5.222</td>
<td>4.895</td>
<td>4.895</td>
<td>1.23</td>
<td>0.273</td>
</tr>
<tr>
<td>Gender-N</td>
<td>1</td>
<td>6.766</td>
<td>10.801</td>
<td>10.801</td>
<td>2.71</td>
<td>0.106</td>
</tr>
<tr>
<td>Age</td>
<td>1</td>
<td>0.018</td>
<td>0.036</td>
<td>0.036</td>
<td>0.01</td>
<td>0.925</td>
</tr>
<tr>
<td>LM</td>
<td>1</td>
<td>22.914</td>
<td>22.914</td>
<td>22.914</td>
<td>5.75</td>
<td>0.020*</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>215.275</td>
<td>215.275</td>
<td>3.987</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>296.850</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Education accounts for the greatest amount of variation in the data. When all of the variables are controlled, mode of presentation becomes statistically significant (p = .020).

3.4.5.3 Looking at the factor of mode (French PB vs. French Text)

Language comparison is important in validating the thesis. The only true comparison between the PB and text modes can be in French.

Table 3.40 Statistical summary for French

<table>
<thead>
<tr>
<th></th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (Correlation)</td>
<td>r = .479</td>
<td>p = .000***</td>
</tr>
<tr>
<td>Age (ANOVA)</td>
<td>F = .67</td>
<td>p = .851</td>
</tr>
<tr>
<td>Gender (T-test)</td>
<td>T = -1.99, df = 17</td>
<td>p = .063</td>
</tr>
<tr>
<td>Reading frequency (Correlation)</td>
<td>r = .193</td>
<td>p = .139</td>
</tr>
</tbody>
</table>

As in the Fon data, we again have confirmation that education was the variable most statistically significant in explaining comprehension levels. Gender is also acting on comprehension although not at the statistically significant level. Since French is a second language, it would be logical that years of education would be the most important variable acting on comprehension.

3.4.5.4 Looking at the language factor for Kabiye

Table 3.41 Statistical summary for Kabiye

<table>
<thead>
<tr>
<th></th>
<th>Standardized Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (Correlation)</td>
<td>r = .655</td>
<td>p = .000***</td>
</tr>
<tr>
<td>Age (ANOVA)</td>
<td>F = 2.72</td>
<td>p = .042*</td>
</tr>
<tr>
<td>Gender (T-test)</td>
<td>T = -.60, df = 23</td>
<td>p = .56</td>
</tr>
<tr>
<td>Reading frequency (Correlation)</td>
<td>r = .168</td>
<td>p = .376</td>
</tr>
</tbody>
</table>
Education is highly significant, with age also showing up as significant. Gender does account for some of the variation but not statistically significant. Interestingly, reading frequency does not appear significant as it did in among the Fon. The results from the one way ANOVA in Table 3.25 show a significant advantage for the Kabiye PB over the French PB when all the covariates are considered. This is evidence of an advantage for the presentation in Kabiye, the mother tongue of all readers in the Kabiye segment of the study.

3.4.5.5 Correlation for education and reading frequency across all modes

Table 3.42 Correlation for education and reading frequency

<table>
<thead>
<tr>
<th></th>
<th>Kabiye PB</th>
<th>French PB</th>
<th>Fon Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>( r = .655, p = .000^{***} )</td>
<td>( r = .378, p = .040^{*} )</td>
<td>( r = .576, p = .001^{**} )</td>
</tr>
<tr>
<td>Reading Frequency</td>
<td>( r = .167, p = .376 )</td>
<td>( r = .202, p = .286 )</td>
<td>( r = .184, p = .329 )</td>
</tr>
</tbody>
</table>

The correlation between education and reading frequency for the Kabiye sample is \( r = .182 (p = .085) \) which is not significant. In Kabiye, education is significant and reading frequency is not.

3.5 Conclusions for the Kabiye analysis

The major hypothesis of the study is not supported by the Kabiye data. The principle variable acting on comprehension was education, leading one to suppose that the subjects chosen by church leaders were relatively well educated whether they were reading in Kabiye or French.
In contrast to the Fon case, one of the modes of presentation was significantly superior to the other – the Kabiye PB. This suggests that reading skills in Kabiye are more highly developed than in Fon. Reading frequency did not show up as a significant variable in the Kabiye data.
Chapter 4 Conclusions

In this section I will attempt to interpret the analysis and give constructive insight as to the ramifications of the results. This section is divided into three parts. The first part draws conclusions from the Fon analysis. The second treats the Kabiye analysis. In the third part conclusions will be drawn from looking at both the Fon and Kabiye analyses.

4.1 From Fon analysis

Comparing the picture book mode against the text mode showed that there was a slight advantage for the picture book mode in French and Fon but this did not prove to be statistically significant. Those reading the picture book in Fon did not comprehend as well as those reading the picture book in French but the difference here was also not statistically significant. The results do not favor one mode over another.

Men had more education on average than women. This was to be expected. It is often the males that are encouraged to attend school. Since 1995 there has been more of an emphasis on females attending schools with subsidies coming from USAID. This is helping to change practices but for the purposes of this study, almost all of the subjects had attended school before 1995.

Uneducated females tended to want to read the Fon PB rather than either of the French modes. This led to a significant difference in the number of women who read the Fon PB as opposed to men. As was demonstrated in the analysis, these women, even without any formal education, scored well in relation to the other modes. Many of the women went through Fon literacy classes held at their churches. They also exhibited a reading frequency close to the other respondents from the other modes, which was the most statistically significant variable acting on comprehension for the Fon PB. From the
results of the analysis, it can be concluded that proficiency in Fon did not come from formal education but from informal education and practice. A practical implication might be that Fon literacy classes could be provided for those with minimal education. In doing so, this part of the population could achieve parity in comprehension with those schooled in French.

The mode of language also did not show itself as a statistically significant variable acting on comprehension with Fon subjects. They showed a preference toward French. A key factor acting on the results from the first story was the lack of knowledge Fon respondents had of the Fon numbering system, particularly the system of counting money. The Fon have two different counting systems, one for money and one for general counting (Deha 2006:32-34). Both of these systems were mentioned in the first story. The Fon respondents for the Fon PB did poorly on the questions which asked for numeric responses.

There were significantly more female respondents than male respondents in each mode but particularly in the Fon PB mode (23 females as opposed to 7 males). This may reflect social realities in urban settings where women tend to be more available for research activities than men. They also are more likely to attend church meetings during the weeknights, when most of the interviews were held.

4.2 From Kabiye analysis

The research question underlying this study was whether the picture book mode would provide a higher level of comprehension for the reader. In the data however, there was no statistically significant difference in comprehension between the French PB and
the French text. The revised data showed no statistically significant advantage for the Kabiye PB over the French text when no other variables were taken into consideration.

The results from the Kabiye data clearly show that language was a significant variable in the level of comprehension. Those reading the Kabiye PB had a higher mean of comprehension as compared with either of the French modes. The language mode was the second most salient variable (next to education) in the Kabiye in explaining the comprehension results. Most of the respondents were from churches that were involved in Kabiye literacy programs. Literacy programs among the Kabiye are much more developed compared to literacy among the Fon. Each of the areas where the Kabiye respondents came from has an active literacy supervisor coordinating church-based literacy programs.

Almost twice as many respondents were male (59) as female (31). Since education was a key variable acting on comprehension with males having more education on average, the fact that males had more education than females influenced the results. There is still a question as to why education was the most salient variable acting on comprehension among those reading the Kabiye PB rather than reading frequency, which was the most important variable among those reading the Fon PB. It could be that the educational differences between the Fon PB readers and the French PB readers were substantially higher than between the Kabiye PB readers and French PB readers. A closer look at the education levels among the Kabiye PB female respondents shows a mean of 8.07 years of formal education. For the female respondents of the Fon PB the mean was 4.5 years. Kabiye women had about twice as much formal education, which was reflected
in the data. This may be the reason that education showed up as a more salient variable than did reading frequency among the Kabiye.

4.3 From a comparison of both Fon and Kabiye analysis looked at together

One factor that was not tested was the subject’s prior knowledge of the stories. Since all of the subjects came from churches, it should be expected that they would have some prior knowledge, which might have given them an advantage in comprehending the stories. It might have been prudent to administer a pre-test to determine the subjects’ knowledge level. The types of questions that were asked in the interviews were fairly specific. The subject’s familiarity (shared mutual environment) with the story could have facilitated their understanding. Prior knowledge could be considered to be at the same level of importance in acting on comprehension as was education.

In the Fon data, reading frequency came out as the most important variable acting on comprehension levels for those reading the Fon PB. This was not the case with the Kabiye PB data, which showed that education, not reading frequency, was the most important variable in comprehension. As was stated in the Kabiye conclusion, the education levels were higher among the Kabiye PB respondents which meant that education was the more salient variable. Fon PB respondents did not have as much education and relied more heavily on reading frequency.

It was very interesting to note that the language mode results were very different between the Kabiye and Fon. Among the Kabiye subjects language mode was a significant factor at $p = .019$ favoring the Kabiye PB when all covariates were taken into account. Among the Fon subjects the language mode was not a factor at $p = .869$. This may be an influence of environment. Since most of the Kabiye subjects were based in
largely rural areas, they had a preference for Kabiye language use. They may only use French on market days, on official business or in church. For the Fon subjects, who were largely from urban settings, there was more of a preference for French, while still using the Fon language at home. The Fon in urban areas also live among many other language groups and often times French is the most common mode of communication between them.

The Kabiye value their language and have made an effort to preserve it through literacy programs. The test results show that they had better comprehension reading in their own language. The Fon in urban centers are showing more of a preference for French to the neglect of learning their own language. One example of this is the discarding of the Fon numbering system. There is now a strong preference for using the French counting system, especially in terms of money. It also needs to be noted that the use of French is highly valued. There is a general expectation in Togo and Benin that if someone in a country village learns French well, they should go to the city where they may be able to gain more of an economic advantage, which could eventually benefit the family and the village.

Across both data sets, male respondents had higher educational levels than females did. This could also help to explain the different results from the Fon and Kabiye data. Among the Fon respondents, 53 were females and 37 were males. Among the Kabiye it was almost the opposite, 31 were females and 59 were males. Fon males had an education mean of 9.162 years as opposed to the mean for Fon females at 7.17. Kabiye males had an education mean of 9.42 years while females had a mean of 7.94. It is also interesting to note that Kabiye men living in largely rural environments had a slightly
higher education mean than did their Fon counterparts who lived largely in urban settings. This same observation can be applied to Kabiye women and Fon women. It might have been prudent in the research design to have had a more equitable spread of males and females throughout all modes. One of the sub-hypotheses of this thesis was that people from an urban area reading the picture book in French would have higher levels of comprehension compared with those who read the French picture book in rural areas.

Although the statistical analysis did not provide much support for the principle hypothesis of JSIT material providing better comprehension than text, it was greatly encouraging to observe the respondents’ reactions toward the picture book. The responses where overwhelmingly positive (98.5%) to the effect this genre had on them. They were motivated to read more and felt more engaged in the reading process through the picture book (Appendix C). If most of the respondents had the opportunity to read a picture book or a paper with only text on it, they would pick up the picture book every time. If this is the kind of material that gets people reading, then according to this analysis, their level of comprehension will not suffer for the use of it.
Chapter 5 Implications

In this section implications will be drawn from the analysis which will have a bearing on vernacular scriptures, local churches, church planting and adult literacy programs. An attempt will also be made to draw implications for governments, particularly in West Africa.

5.1 For vernacular scripture use.

Making the Scriptures accessible in oral cultures with multilingual environments is a challenging proposition. The first challenge is to present a subject matter that largely interests people in the culture. The subject can be presented in many different ways. Oral stories are one of the best ways of transmitting subject matter in these types of environments. But when trying to present a subject textually it may be challenging to engage people in the difficult process of reading. Juxtaposed sequential images with text can help facilitate the transmission of subject matter in an engaging way, especially for the newly literate who have a desire to read the Bible in their own language but simply are not at the level to read it with comprehension. As the analysis indicates, those that read the picture book format did as well, and sometimes better than those reading text. This means that the picture book, with about half the textual load, communicated just as well with the aid of juxtaposed sequential images, as did a text-only version of the same subject matter.

The responses to several of the questions in the second story seem to show that the images in the picture book helped respondents to understand better than the text version did. One particular question was about Lazarus, a friend of Jesus, who had been dead for four days. Jesus came to where Lazarus had been buried. The question posed to
the respondents was, “What did Jesus ask the people to take away from the tomb?” Those who read the picture book did significantly better on this question, because they could see the answer in the illustration of a round stone covering an entry to a walk-in tomb that had been dug out of a large rock formation. Those reading the text had to try and picture what a tomb might look like in their own imagination, which may have defaulted to cultural norms of burying people in a casket underground. The fact that the answer had been stated in the text was not a guarantee that the respondent would understand what it meant. Most of the respondents probably had many years of attending church and carried significant background knowledge of this story. Imagine the possibility for misunderstanding the text of a Biblically naïve person. Scripture put into JSIT has the advantage of making the subject matter more explicit by taking away much of the ambiguity that a Biblically naïve person would have reading Bible text.

5.1.1 For local churches

In West Africa, reading materials in churches is almost non-existent, except for a few Bibles in a language of wider communication (LWC). There are situations where the New Testament of the Bible is available in the local language or a similar dialect. The majority of those attending church do not have a Bible in any language and if they do, it is probably very difficult to read. With the median age of 15 in sub-Saharan Africa, there is a significant need for easy-to-read literature that will be engaging and will encourage one to continue to refer to the Scriptures throughout their lifetime. The leader(s) of a local church will find that JSIT will help them to visualize Bible passages so that they can more vividly and accurately retell Bible stories.
5.1.2 For church planting

How can biblical JSIT materials help in church planting? The qualitative data from the respondents indicates that the picture book would be appropriate for evangelism. One of the challenges of planting churches is the problem of syncretism. This is largely due to a lack of Bible knowledge and not being able to make Scripture relevant to every area of life in a given cultural context. Bible picture books can help a young church quickly get to a basic level of understanding of key themes and principles to guide their daily lives.

5.2 For adult literacy programs

The results from the Fon PB analyses seem to indicate that a person with little or no formal education and with little or no access to reading materials in a LWC (in this case French) can read with good comprehension if they have reading materials in their own language and practice reading on a regular basis. This would suggest that literacy programs among adults with little education might be more effective if done in their mother tongue and if a means can be found to encourage regular reading.

The average age of the respondents was about 30 years with the age range from 15 to 74. The response of the subjects to the picture books was overwhelmingly positive. Some adults saw the picture books as appropriate for children but there did not appear to be an obvious aversion by adults to using the picture book format. JSIT materials could play a key role in facilitating adult reading programs as long as they are not stigmatized by the larger society.
The Kabiye PB analysis suggests that even if a person has received over 15 years of formal education in a LWC, they might read slightly better in Kabiye. This shows that mother tongue literacy among adults, particularly those who do not have much formal education can greatly benefit their level of comprehension by learning to read in their MT rather than in a LWC. In this type of adult literacy program, transitional primers from a LWC to a L1, followed by practicing reading through JSIT books and other materials in the L1 could quickly bring an L1 speaker up to a good level of reading functionality in their language.

5.3 For governments

Governments are charged in most nation states with the responsibility of educating their citizenry. The great challenge, particularly in West Africa, is how to educate citizens with inadequate resources. Ever since the 70’s, the government of Benin
has purposed to start educating children in their mother tongue. Even though their intentions are admirable, there has not been the political will or resources to accomplish this mandate. In 2007, the Beninese government has again renewed this program by planning for various pilot projects in several languages to test and see if the program is feasible. There are many program obstacles that must be overcome – principally, teacher training, material development and possibly language preference. The indication from the JSIT book analysis points to this type of material being ideal for a bilingual schooling situation.

The data shows a clear advantage for the use of L1 materials. Based on the Fon data, it would take 11 or more years of formal education in the French system to reach the level of comprehension of those who had basic reading skills in Fon gained in a couple of years of informal adult literacy classes (see Table 7.2). In order to verify that the education levels in the data could be generalized throughout the Fon population living in urban areas, 497 subjects were asked their age, gender and number of years of formal education. From the sampling, it can be shown that 40.4 percent of males and 23.9 percent of females have obtained a level in French such that their skills in reading comprehension are equivalent to or greater than those acquired by Fon adult literacy graduates. The implication is that the other 60 percent of men and 76 percent of women are still best served by having materials available in Fon. Also, according to the survey, the proportion of children going to school has essentially remained unchanged over the last 35 years. This underlines the need for Fon-based materials for the foreseeable future.
School materials should be produced with the end user in mind. If students are given JSIT materials in their L1, the likelihood that they will learn to read in their L1 will be very good. To keep costs down, picture book templates could be produced in economies of scale with different languages being printed on them later as needed. JSIT could be appropriate for most academic subjects. It has been used effectively to improve the academic performance of students (Blitz 2003, Yang 2003) in the U.S. JSIT materials have also been shown to effectively help those with reading disabilities and those who find reading difficult or not interesting (Méndez 2004).
Chapter 6 Suggestions for Further Study

During the course of this study several other research possibilities related to JSIT have presented themselves. These suggestions for further research may help in clarifying the benefits and challenges of using JSIT materials. The following are not listed in order of importance.

6.1 Testing transition guides to see if they improve comprehension

Would the use of a transition guide from French to the L1 improve comprehension in the L1? It is assumed that a transition primer would have a significant impact on the Fon who had trouble answering questions requiring knowledge of the Fon numbering system. It would be interesting to test subjects again after having gone through the book “Lire et Compté en Fongbe.” Comprehension levels could then be compared, possibly showing the value of the transition primer.

6.2 Testing those 15 years or younger

The reason for choosing the age of 15 is that this is currently considered the average age on the continent of Africa and is representative of the populations of Togo and Benin. The average age of the subjects was 36 among the Fon (the youngest being 15 and the oldest 74) and 30 among the Kabiye (the youngest being 16 and the oldest 65). It would have been more representative if half of the respondents had been 15 years of age or younger. One of the criteria for selection of subjects for the interviews was that they could read in both French and their L1. It is interesting that the church pastors, whom we asked to select the subjects, only selected adults. This could indicate that L1 literacy is largely targeted toward, or taken advantage of, by adults among the Fon and Kabiye.
Having younger subjects would also provide a point of comparison in reading frequency with older, more experienced readers.

6.3 Fon counting system and difficulties in comprehension

One of the reasons that the first story scores were lower in the JMPB than for the text was that four of the questions asked for numeric responses. The Fon who live in urban areas are not as familiar with their own counting system as those who live in the countryside. Often the Fon in a city will switch over to French to do their calculations. The way the Fon count is largely responsible for this phenomenon. The Fon counting system is based on beads put on a string. A string can contain up to 40 beads at which point they are tied off. When five strings of 40 beads each are completed the strings would be tied together. The five strings looked like a person’s foot, so “foot” became the name for 200. The number for 400 is “feet.” Since most of the Fon subjects grew up and live in a major urban area they may not have developed their Fon counting system to a proficient level because of the use of French. In comparison, the Kabiye, who are mostly in rural settings did not have similar problems with their numeric system, probably because it is used more frequently.

6.4 Picture books in relation to a local language reading program

A certain item of reading material cannot be adequately assessed in isolation, but in conjunction with other reading materials. What would be the preference of readers between the different reading materials available? Would they prefer JSIT materials over other types of reading materials? Would Bible-based JSIT materials actually help promote reading the Bible in the L1 or a LWC? Would sales of Bibles be influenced?
6.5 Accompanying use of audiostreaming recordings and the picture books.

The JMPB project in Togo and Benin is planning to have a dramatic reading of the picture book in Fon. The purpose of this is to make the picture book available to the pre-literate. Cassette players are widely available and run off batteries in areas where there is not access to electricity. Would this truly make the picture book more accessible? Would it promote reading?

6.6 Longitudinal study to test for comprehension retention

If by reading JSIT materials, people remembered more details than they did in text form, then this would be a significant finding. A similar question is can the people reading JSIT materials re-tell a story with more precision as compared to receiving it orally or textually. This type of longitudinal study could show the value of schema theory and iconic memory.

6.7 Font size impact on readability.

The font size of a Bible in French or the L1 is usually about 9 points. The picture book used a font size of 12 Arial with the text versions of the stories being in font size 14 Arial. This facilitated the reading task for the subjects. If they had read the text in a smaller font size would this have had a negative impact on reading comprehension? A more accurate comparison might have been to put the text version of the stories in the same font size and format that is available in the Fon, Kabiye and French versions of the Bible. Many people in Africa do not have access to proper prescription lenses or magnifying glasses, therefore, smaller type is very difficult to read.
6.8 *Study those with less than 8 years of formal education.*

This would be in conjunction with 6.2. Would testing those with limited education show how JSIT materials could be helpful in motivating beginning readers and facilitating their understanding in relation to other forms of reading?

6.9 *JSIT materials accepted as Scripture?*

Do people perceive JSIT materials as extra biblical? Would different audiences consider it part of the Scriptures?

6.10 *Bible based JSIT materials in a Muslim context.*

JSIT materials may also have interesting implications in a Muslim context if Biblical comic books are not perceived as “the Bible.” The Bible Societies may have already collected some information on this from distribution efforts in areas where Islam is prevalent.

The study as a whole has provided broad coverage of a topic of interest beyond its initial audience, both in the literature and the project that incorporates and applies those concepts.
Appendix A

Research materials

A.1 Questionnaires

First Story French version

Première Histoire
Langue_______________________________________
Age_________________________________________
Sexe M / F (encerclez la réponse choisie)
Niveau d’étude _____________________________
Cochez la réponse qui convient à la question : Quelle est votre fréquence de lecture chaque jour ?:
   trois ou plusieurs fois par semaine
   au plus une fois par semaine
   deux fois par mois
Répondez à chacune des questions suivantes :
1.  A quel disciple Jésus demanda-t-il de nourrir les gens ?
2.  A combien les disciples ont-ils évalué le coût de la nourriture (à donner aux gens) ?
3.  Qu’est-ce que le petit garçon a offert à Jésus ?
4.  Combien de paniers de nourriture sont restés après le repas ?
5.  Jésus demanda que les gens s’asseyent en group de combien ? (50)
6.  Qu’est-ce que Jésus demanda à Philippe de faire ?
7.  Quelle était la réaction de Philippe et des disciples face à la foule affamée ?
8.  Qu’est-ce que les gens voulaient que Jésus soit pour eux ?
9.  Comment Jésus multiplia-t-il la nourriture ?
10. Que fit Jésus après ce grand miracle ?

* Pour ceux qui ont lu la BD : Qu’avez-vous aimé ou pas aimé dans la présentation de l’histoire ?
Second Story French version

Réponds à chacune des questions suivantes
1 Comment s’appelait l’ami de Jésus qui était mort ?
2 Donnez le nom d’une des sœurs de Lazare dans l’histoire
3 Quelle assurance Jésus donna-t-il à Marthe ?
4 Quel miracle Jésus a-t-il fait ?
5 Depuis combien de jours Lazare était-il mort avant l’arrivée de Jésus ?
6 Qu’est-ce qui a été fait au corps de Lazare après sa mort ?
7 Qu’est-ce que Jésus a demandé aux gens d’enlever de la tombe ?
8 Pourquoi Jésus ressuscita-t-il Lazare ?
9 Que croyait Marthe que Jésus était ?
10 Qu’est-ce que Jésus demanda à Lazare de faire ?

* Pour ceux qui ont lu la BD : Qu’avez-vous aimé ou pas aimé dans la présentation de l’histoire ?
First Story Fon version

Hwenuxó nukɔn ti ṉn ḵ: Jezu na ṉn nũduɖu gbɛtɔ dɛgba-dɛ-afatɔɔn
Gbe
Xwe
Sunnu Ynɔnu

Bà te mɛ wɛ mi se wema yi je?
Ne wɛ mi kɔn no xa wema gbɔn hwehwe?
↓ Ayihɔngbe tegbeɛ
↓ Azɔn atɔn kabí azɔn gege qo Aklunɔzan gbla ᵅɔkpo mɛ.
↓ Azɔn ᵅɔkpo géé qo Aklunɔzan gbla mɛ.
↓ Azɔn we sun ᵅɔkpo mɛ.

Mi ná sin nu nũkanbyɔ elɔ lɛɛ ᵅɔkpo ᵅɔkpo.
1 - Deví ᵅetɛ we Jezu ka ᵅɔ ná ᵅɔ n’í ná nũduɖu mɛ lɛɛ?
2 - Nabí we devi lɛɛ lɛn akwɛ ᵅee hudo bɔ e na sixu ná nũduɖu mɛ lɛɛ ɔ ᵅó?
3 - Ɛtɛ wɛ nyaví vœ ɔ ká ná Jezu?
4 - Nũduɖu xasu nabí wɛ ka kpo ci ayï?
5 - Ɛtɛ wɛ mɛ lɛɛ ka jlo nũ Jezu ní nyï?
Ze xwi dɔ sin e je xá nũkanbyɔ elɔ lɛɛ ɔ sin nukɔn:
6 - Ani Jezu ka zɔn Filipu
7 - Hwe e nu mɛ lɛɛ ka jɛ xósú jí ᵅɔ xoɔvé sin emi e ɔ etɛ wɛ Filipu ᵅpodo deví lɛɛ ᵅpɔ ka blɔ ?
8 - Ɛtɛ wÝ mĩ lĩyũ ka jlo fĩy Jezu n’i nyi nu yɛ?
9 - Ne wɛ Jezu ka só nũduɖu kpɛ ɔ só dɔ huzu wɔbubuntu nã gbɔn?
10 - Ani Jezu ka blɔ dɔ n nũjiwũ enɛ gudó?
Second Story Fon version

Mi ná sin nu nukanbyó eló leé ɗokpó ɗokpó.
1 – Ně we Jezu sin xonton ṣẹkú ó nó nyí?

2 – Ná lazáa sin novi nyōnu leé ɗokpó sin nyikó

3 - Ganjewu tè we Jezu ka ná Mata?

4 – Nűjìwù tè we Jezu ka bló?

5 – Èe lazáa kú e ó, azan nabi tón gó ó gbe we Jezu yi fíné?

6 – Dée lazáa kú e ó, nè we e wa agbaza tón sin nũ gbön?

7 – Ètè we Jezu ka byó me lé e ṣò ye ní ñe sin yódo ó mé?

8 – Ètè wutu we Jezu ka tón lazáa wa gbe?

9 – Ètè we Mata ka ḍi ṣò Jezu nyí?

10 – Gbe tè we Jezu ka ṣe dó Lazáa?

* Ètè we nyo nukun miton aló ètè we ma ka yńo nukun miton me ṣò ałkpa e ji e sọ hwenuxó eló ó xle mi gbön ó sin ali xo a ?
First Story Kabiye version

Yeesu calûû ÿyaa kudoki kagbaanzù yý.
Kûnû.... . . .... Tým kydûû.. . . ..
Pûnzû... . . . .
Halû naa abalû?
Sukulî kama.. . . . . .
Tým cosuu yýý cýnaû.

þzùma útùûkalû...?

☐ Küyakû tü a naa we?
☐ Tým naadozo yaa tým sakûyî kpûtaû taa?
☐ Tým kûdûm kpûtaû taa yaa we?
☐ Tým naalîy fena... taa yaa we?

Icosi tým ndû ndû pûpûzûû-mû yý.
1. Yeesu týmkpîlûkûyaa taa líy, anû eheyaa se ýcalû sama...?

2. Liidiye ýzûma Yeesu týmkpîlûkûyaa ma...zaa se papûzû... payabûnû týýna... nû pacalûnû sama...?

3. Afýkû tindine kagbaanzù nû kpakpasû naalîy?

4. Týýna... fýkû ýzma pûkazaa?

5. Êbê yýaa ca... se Yeesu ýkûña?

6. Yeesu heyi Filiipu se ýla we?

7. Filiipu nû Yeesu týmkpîlûkûyaa paaheyyi sama... ÷ga nÉýyûsû wû...a...-kû yý se we?

8. Êbê yûû yûû ÿyaa nÉûna... se Yeesu ýkû pe-wiyyaû?

9. Êzûma Yeesu laba nû tûûôna... huu?

10. Êbê Yeesu labû hama lakaasû sýsýsû wayû?
Second Story Kabiye version

Tým kýdûû naalû nĚûmbû(T2)

Yeesu fezuu Laazaarù yý.

1. Paya... Yeesu taabalû weyi ÿsùba yý se we?

2. Yaa Laazaarù kýynaa taa nýyyyû yûfý.

3. Yeesu nûwa se y-taabalû sùba lû, ÿla we?

4. Hama lakasû nzù Yeesu laba?

5. Laazaarù sùba ný pûla kûyakû ÿzúma ný pûcû Yeesu tala?

6. Laazaarù sùba lû, ÿzûma palabû-û?

7. þbû Yeesu tým se patûlû pûlaû nûûy?

8. Pûlabû ÿzûma nû Yeesu fezi Laazaarû?

9. Maarûtû wûnû lidaû se Yeesu lû anû?

10. Yeesu holini Laazaarû se ÿla we?

Mba mú úkalû kûlûmû takaya... kaný yû, ÿbû kûydûnû-mû yaa pûtûkûydûnû-mû tûm kûydûû punû pû-cûlûû taa?
**First Story English version**

Language: __________________________

Age: __________________________

Gender: M / F (circle one)

Education level: __________________

Check one of the responses to the following question: How often do you read?

- [ ] every day
- [ ] three or more times week
- [ ] at least once a week
- [ ] a couple of times a month.

Provide one answer for each of the following questions:

1. Which disciple did Jesus ask to feed the people?

2. How much did the disciples think it would costs to feed all the people?

3. What did the little boy offer to Jesus?

4. How many baskets of food where left over?

5. Jesus asked that the people sit in groups of how many?

6. What did Jesus ask Philip to do?

7. What was the response of Philip and the disciples to the hungry crowd?

8. What did the people want Jesus to be?

9. How did Jesus multiply the food?

10. What did Jesus do after this miracle?

*For those who read the comic book: What did you like or not like about the presentation of the story?
Provide one answer for each of the following questions:

1. What was the name of Jesus’ friend who died?

2. Name one of Lazarus’ sisters in the story.

3. What assurance did Jesus give Martha?

4. What miracle did Jesus perform?

5. How many days had Lazarus been dead before Jesus came?

6. What was done to Lazarus’ body after he died?

7. What did Jesus ask the people to remove from the tomb?

8. Why did Jesus raise Lazarus from the dead?

9. What did Martha believe about Jesus?

10. What did Jesus command Lazarus to do?

*For those who read the comic book: What did you like or not like about the presentation of the story?
Jésus nourrit une foule

Un jour Jésus était en train d’enseigner et de guérir les malades. Il y avait une grande foule au bord de la mer de Galilée. La nuit s’approche. Jésus demande à Philippe : « Où pourrions-nous acheter assez de pain pour nourrir tout ce monde? »

Philippe répond : « Même 200 pièces d’argent ne suffiraient pas. »

Mais André dit : « Il y a un garçon qui n’a que cinq pains et deux poissons. » Or il y avait environ cinq mille hommes.

Jésus dit à ses disciples : « Faites asseoir tout le monde par groupe de cinquante. » Ils les font asseoir et Jésus prend les cinq pains et les deux poissons, puis rend grâce à Dieu. Il les rompt et les donne à ses disciples pour qu’ils les distribuent à la foule. Tous ont mangé et sont rassasiés et l’on a ramassé douze paniers pleins de morceaux qui restaient.

C’est de cette façon que Jésus a nourri des milliers de personnes. Les gens ayant vu le miracle que Jésus a fait, disent : « C’est Lui le Messie qui devait venir ; Couronnons-Le roi. »

Jésus dit à ses disciples : « Renvoyons les gens chez eux puis passez de l’autre côté avec la barque. Moi, je reste encore ici sur la montagne pour prier. »
A.3 Text Version of Second Story in French

Jésus a ressuscité Lazare

Un jour Jésus est appelé à Béthanie, un village près de Jérusalem parce que Lazare est malade. Lui et ses sœurs Marthe et Marie sont des amis de Jésus. Mais quand Jésus arrive enfin à Béthanie, Lazare est déjà mort et enterré depuis quatre jours. Lorsque Jésus s’approche de la maison, Marthe court à sa rencontre et lui dit: « Seigneur si tu avais été ici, mon frère ne serait pas mort. »

Jésus lui répond: « Marthe! Ton frère ressuscitera. »

« Oui, je sais, il reviendra à la vie à la résurrection des morts au dernier jour, » réplique Marthe.

Jésus reprend la parole et dit : « Je suis la résurrection et la vie ; celui qui croit en moi vivra. Crois-tu cela, Marthe? »

« Oui, je crois, Seigneur ! Tu es le Messie ; celui qui devait venir sur la terre, » répond Marthe.

Alors Jésus lui demande : « Où l’avez-vous déposé ? »

« Viens et vois, Seigneur, » lui dit Marthe.

Jésus se met à pleurer parce qu’il aime beaucoup Lazare. Certaines personnes disent : « N’aurait-il pas pu empêcher la mort de Lazare? »

En Israël, on embaume les morts et on les dépose dans des caveaux creusés dans le rocher. Arrivé à l’endroit, Jésus demande d’enlever la pierre qui ferme le tombeau.

« Seigneur, il sent car il est là depuis quatre jours, » lui dit Marthe.
« Vous verrez la gloire de Dieu, » déclare Jésus avant de s’adresser à son Père en ces termes : « Père, je fais ceci afin qu’ils croient que c’est toi qui m’a envoyé. » Et d’une voix forte il dit : « Lazare sors! »

Aussitôt, Lazare sort du tombeau, entouré de banderoles. Jésus demande qu’on le délie et qu’on le laisse aller. C’est ainsi que Jésus a ressuscité Lazare des morts.
La nuit tombe alors que Jésus enseigne et guérit encore...

Philippe, où pourrions-nous acheter assez de pain pour nourrir tous ce monde ?

Même 200 pièces d’argent ne suffiraient pas ! Il y a ici un garçon qui a 5 pains et 2 poissons. C’est tout.

Faites assoir tout le monde par groupe de 50.

Jésus remercie Dieu... Il partage les pains et les poissons et tous sont rassasiés.
Jésus nourrit des milliers de personnes de cette façon.

C'est celui le Messie qui devait venir.

Couronnons-le roi!

Regardez ! On a ramassé 12 paniers de restes.

Rendez-vous les gens chez eux, puis passez de l'autre côté avec la barque. Moi je reste encore ici, sur la montagne, pour prier.
Jésus est appelé à Béthanie, un village près de Jérusalem. Lazare est malade. Lui et ses sœurs, Marthe et Marie, sont des amies de Jésus. Mais, quand Jésus arrive enfin à Béthanie, Lazare est déjà mort et enterré depuis quatre jours...

Seigneur !

Seigneur, si tu avais été ici mon frère ne serait pas mort.

Marthe : Ton frère ressuscitera.

Oui, je sais. Il reviendra à la vie à la résurrection des morts, au dernier jour.

Je sais la résurrection et la vie. Celui qui croit en moi vivra. Crois-tu cela, Marthe ?

Oui, je crois, Seigneur ! Tu es le Messie, celui qui devait venir sur la terre.

Où l'avez-vous déposé ?

Viens et vois, Seigneur !
Jésus pleure, il l’aimait beaucoup.

N’aurait-il pas pu empêcher la mort de Lazare ?

En Jérusalem on embaumage les morts et on les dépose dans des catacombes creusées dans le rocher.

Enlevez la pierre devant le tombeau.

Seigneur, il sent déjà car il est là depuis 4 jours…

Vous verrez la gloire de Dieu.

Père, je fais ceci afin qu’ils croient que c’est toi qui m’as envoyé.

LAZZAAARE ! SORS !

Déliez-le et laissez-le aller.
Kabiye version of first story (page 1)


Eee, Kupaylo mentisaal. Naa sujua se okoo kederja yoo, nay le Eso Puaylo. Mafeziyini sujua ne mahay-wa wezu. Weyi ewon lido mo-yo yo, ewey wezu. Maarta, qitos mbo yaa we?

Ley ipim-i? Kupaylo! Kaa ne uuna.
Kabiye version of second story (page 2)
# Appendix B

*Text and image comparison*

## First Story

<table>
<thead>
<tr>
<th>TEXT</th>
<th>IMAGE</th>
<th>Supplemental information</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG: Jesus is speaking and healing again. It’s getting late...</td>
<td>Jesus standing next to a group of men looking out over a large crowd. There is a tree trunk close to them and a lake in the distance. There are several hills in the background.</td>
<td>Narrator frame indicates this is added information</td>
</tr>
<tr>
<td>FRE: La nuit tombe alors que Jésus enseigne et guérit encore...</td>
<td></td>
<td>Dialogue box with arrow indicates Jesus is talking.</td>
</tr>
<tr>
<td>ENG: “Philip, how are all these people going to get food? Why don’t you give them something?”</td>
<td>Philip is shown holding a moneybag. He has a concerned look on his face. Another disciple is shown ushering a young boy toward Jesus with a small basket of 5 loaves (hard to see) and two fish (easily seen). The boy is smiling as if he is willing to give his meal to Jesus. Two other disciples look at the boy. Jesus reaches down to receive the boy’s meal. He’s smiling.</td>
<td>Dialogue box with arrow indicates Philip is speaking</td>
</tr>
<tr>
<td>FRE: « Philippe, où pourrions-nous acheter assez de pain pour nourrir tous ce monde ? »</td>
<td></td>
<td>Dialogue box with arrow indicates Andrew is speaking</td>
</tr>
<tr>
<td>ENG: “Eight months’ wages would be nowhere near enough!”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRE: « Même 200 pièces d’argent ne suffiraient pas! » (Even 200 pieces of silver wouldn’t be enough!)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG: “Here is a boy with five loaves and two small fishes. That’s all there is.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRE: « Il y a ici un garçon qui a 5 pains et 2 poissons. C’est tout. »</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG: “Get the people to sit in groups of 50.”</td>
<td>Jesus face is shown with part of the boy’s basket showing. No other people are in this picture.</td>
<td>Dialogue box with arrow indicates Jesus is speaking</td>
</tr>
<tr>
<td>FRE: « Faites asseoir tout le monde par groupe de 50. »</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG: Jesus thanks God...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRE: Jésus remercie Dieu...</td>
<td>Jesus is holding up the basket toward the sky and saying something. His eyes look thankfully upward. The smiling boy looks at Jesus.</td>
<td>Narrator frame indicates this is added information</td>
</tr>
</tbody>
</table>
| ENG: He breaks the bread and fish.  
FRE: Il partage les pains et les poissons et tous sont rassasiés. (He shares the bread and fish and everyone is satisfied) | Two hands are shown each with a half a piece of round bread. There is a basket full of bread below. | Narrator frame indicates this is added information |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NO TEXT</td>
<td>Jesus is shown putting halves of bread into a basket. Three disciples are gathered around Jesus. One (Peter) has a basket full of bread on his shoulder. He is looking at Jesus with surprise and astonishment. Another disciple (James) is smiling as he holds the basket that Jesus is dropping the bread into. A third disciple (Philip) is seen from the back of his head.</td>
<td></td>
</tr>
</tbody>
</table>
| ENG: Thousands of people are fed as Jesus multiplies the food...  
FRE: Jésus nourrit des milliers de personnes de cette façon. (Jesus feeds thousands of people in this way.) | A large group of people are sitting and eating. One person is shown eating under the shade of a tree. Those faces that are seen are smiling. Several disciples are shown distributing food. | Narrator frame indicates this is added information |
| ENG: “He must be the Messiah who’s supposed to come.”  
FRE: « C’est celui le Messie qui devait venir. »  
ENG: “We’ve got to make Him King!”  
FRE: « Couronnons-le roi! » | Three men are shown sitting together. One is reclining behind the other two. One man, in green, makes an appealing-type gesture with his hand to another man, in orange and brown. One man is holding a piece of bread. | Dialogue box with arrow indicates a man dressed in orange and brown is speaking.  
Dialogue box with arrow indicates a man dressed in green is speaking. |
| ENG: “Just look! There are 12 full baskets left over!”  
FRE: « Regardez !! On a ramassé 12 paniers de restes. » | There are three people shown. Two are the disciples Peter and John. John has a basket full of bread on his shoulders. Peter is kneeling before five baskets of bread and one basket of fish. There is a woman looking admiringly from the background. | Dialogue box with arrow indicates Peter is speaking. |
<table>
<thead>
<tr>
<th>ENG: “It’s time the people should go home. You take the boat and go to the other side. I’m staying here in the mountains to pray.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRE: « Renvoyons les gens chez eux, puis passez de l’autre côté avec la barque. Moi je reste encore ici, sur la montagne, pour prier ».</td>
</tr>
<tr>
<td>Jesus is sitting next to a tree trunk looking as if he is talking. 11 of the disciples are gathered around Jesus. Two women are close by. Three of the disciples are shown with bread in their hands. John is shown leaning against the tree trunk with his arms crossed his chest. There are four full baskets of bread and two full baskets of fish behind Jesus.</td>
</tr>
<tr>
<td>Dialogue box with arrow indicates Jesus is speaking.</td>
</tr>
<tr>
<td>TEXT</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>ENG: Jesus is called to Bethany, a village not far from Jerusalem. Lazarus is ill. Lazarus and his two sisters Martha and Mary are good friends of Jesus. When Jesus arrives in Bethany He hears that Lazarus was buried four days ago.</td>
</tr>
<tr>
<td>FRE: Jésus est appelé à Béthanie, un village près de Jérusalem. Lazare est malade. Lui et ses soeurs, Marthe et Marie, sont des amis de Jésus. Mais, quand Jésus arrive enfin à Béthanie, Lazare est déjà mort et enterré depuis quatre jours...</td>
</tr>
<tr>
<td>ENG: “Lord!”</td>
</tr>
<tr>
<td>FRE: « Seigneur ! »</td>
</tr>
<tr>
<td>ENG: “Lord, if You’d been here, my brother wouldn’t have died!”</td>
</tr>
<tr>
<td>FRE: « Seigneur, si tu avais été ici mon frère ne serait pas mort. »</td>
</tr>
<tr>
<td>ENG: “Your brother shall rise again, Martha.”</td>
</tr>
<tr>
<td>FRE: « Marthe ! Ton frère ressuscitera. »</td>
</tr>
<tr>
<td>ENG: “Yes I know. He will live again at the resurrection on the last day.”</td>
</tr>
<tr>
<td>FRE: « Oui, je sais. Il reviendra à la vie à la résurrection des morts, au dernier jour. »</td>
</tr>
<tr>
<td>ENG: “I am the resurrection and the life. Whoever believes in Me will live. Do you believe that Martha?”</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>FRE: « Je suis la résurrection et la vie. Celui qui croit en moi vivra. Crois-tu cela Marthe? »</td>
</tr>
<tr>
<td>ENG: “Yes Lord! I believe that You are the promised Savior who was to come into the world, the Son of God.”</td>
</tr>
<tr>
<td>FRE: Oui, je crois, Seigneur ! Tu es le Messie, celui qui devait venir sur la terre.</td>
</tr>
<tr>
<td>ENG: “Where have you buried him?”</td>
</tr>
<tr>
<td>FRE: Où l’avez-vous déposé ?</td>
</tr>
<tr>
<td>ENG: “Come and see, Lord!”</td>
</tr>
<tr>
<td>FRE: Viens et vois, Seigneur !</td>
</tr>
<tr>
<td>ENG: “Just look; He really loved him.”</td>
</tr>
<tr>
<td>FRE: « Jésus pleure. Il l’aimait beaucoup. » (Jesus wept. He loved him much.)</td>
</tr>
<tr>
<td>ENG: “But couldn’t He have prevented the death of Lazarus?”</td>
</tr>
<tr>
<td>FRE: « N’aurait-il pas pu empêcher la mort de Lazare ? »</td>
</tr>
<tr>
<td>ENG: Here the dead are wrapped in clothes and put in tombs made in the rock.</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>FRE: En Israël on embaume les morts et on les dépose dans des caveaux creusés dans le rocher. (In Israel, one embalms the dead and puts them in a cave that has been dug out of the rock.)</td>
</tr>
<tr>
<td>ENG: “Remove the stone!”</td>
</tr>
<tr>
<td>FRE: « Enlevez la pierre devant le tombeau. » (Remove the stone in front of the tomb.)</td>
</tr>
<tr>
<td>ENG: “Lord, it will stink; it’s already been four days...”</td>
</tr>
<tr>
<td>FRE: Seigneur, il sent déjà car il est là depuis 4 jours...</td>
</tr>
<tr>
<td>ENG: “You will see God’s glory.”</td>
</tr>
<tr>
<td>FRE: «Vous verrez la gloire de Dieu. »</td>
</tr>
<tr>
<td>ENG: “Father, I am saying this so that the people standing here will believe that You send Me.”</td>
</tr>
<tr>
<td>FRE: «Père, je fais ceci afin qu’ils croient que c’est toi qui m’as envoyé. »</td>
</tr>
</tbody>
</table>

109
<table>
<thead>
<tr>
<th>ENG: “Lazarus, come out!”</th>
<th>The face of Jesus is shown with his mouth wide open as if shouting. His head is at a slight angle.</th>
<th>Dialogue box with lightning arrow indicates Jesus is speaking forcefully. In French version: Letters are in capitals. Font size is twice the regular size. Gives the impression of shouting and commanding.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRE: « LAZAAARE !! SORS ! »</td>
<td>A person totally wrapped in white cloths is standing just inside the entrance of the tomb. The large, flat stone is partially shown beside the entrance of the tomb.</td>
<td></td>
</tr>
<tr>
<td>NO TEXT</td>
<td>Jesus points at Lazarus with his right hand. Martha and Mary run toward Lazarus, who is still totally wrapped in cloths. Peter is standing beside the tomb. The faces of the crowd show surprised and astonished looks.</td>
<td>Dialogue box with arrow indicates Jesus is speaking.</td>
</tr>
<tr>
<td>ENG: “Take off the grave clothes and let him go.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRE: « Déliez-le et laissez-le aller. »</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

Affective responses from subjects

With only two exceptions, all of the affective responses to the JMPB were positive and indicated that the images motivated them to read. One person said honestly, “when it comes to reading I’m lazy, but the JMPB makes me want to keep reading.” Of the 138 respondents the following numbers where compiled: 155 respondents mentioned the positive aspect of the pictures (key words: images, visual, drawings, illustrations); 94 respondents said they thought the JMPB was good (key words: attractive, pleasing, liked, happy, well done); 128 respondents mentioned that the JMPB helped them understand the stories (key words: see, explain, imagine, clarify); and 61 respondents said that the JMPB helped them understand more rapidly (key words: understand, easier, more quickly). The overwhelmingly positive response from adult readers seems to indicate not only an acceptance of the JMPB format but also a preference for it.
“Text” is respondents reading the text-only versions of the stories. After answering the questions they were allowed to look through the JMPB (in either French or their L1) and make comments. “French PB” is respondents reading the French version of the picture book.

<table>
<thead>
<tr>
<th>Responses to JM Picture Book in French among the Fon</th>
</tr>
</thead>
<tbody>
<tr>
<td>If they could have it in all languages it would be of great service for evangelism. (Text)</td>
</tr>
<tr>
<td>It has one formed easy to handle and very comprehensible by pictures and useful for evangelism (Text)</td>
</tr>
<tr>
<td>Everything is especially good and very easy to understand. (Text)</td>
</tr>
<tr>
<td>Easy to read and good for evangelism. (Text)</td>
</tr>
<tr>
<td>It is achieved well and good to do evangelism among illiterates. (Text)</td>
</tr>
<tr>
<td>Drawings are eloquent. Even if people do not read they can imagine the story. Stories are too much summed up. (Text)</td>
</tr>
<tr>
<td>The way things arranged on the page (panels) is confusing. Illustrations are good. (Text)</td>
</tr>
<tr>
<td>I prefer the comic book in my language. It is easier to read and understand.</td>
</tr>
<tr>
<td>There are visual communications (e.g. Martha running to Jesus) that aren't in the text. The pictures helped me to re-tell the story. (Text)</td>
</tr>
<tr>
<td>It is good. (French PB)</td>
</tr>
<tr>
<td>It is for children, for Sunday School. (French PB)</td>
</tr>
<tr>
<td>I like pictures very much and here pictures attract the reader to discover the contents. (French PB)</td>
</tr>
<tr>
<td>It is good. (French PB)</td>
</tr>
<tr>
<td>I appreciate the book. It is pretty. (French PB)</td>
</tr>
<tr>
<td>It is necessary to make arrows to help the readers. (French PB)</td>
</tr>
<tr>
<td>It is good. (French PB)</td>
</tr>
<tr>
<td>Format is very broad and has attractive color. (French PB)</td>
</tr>
<tr>
<td>If one reads it they can better understand the Word of God. (French PB)</td>
</tr>
<tr>
<td>It is a comic book which can help the children in Sunday school better understand the Word of God. (French PB)</td>
</tr>
<tr>
<td>Pictures help make reading easier. I can learn the biblical things. (French PB)</td>
</tr>
<tr>
<td>It is made well. It is easy has understand. (French PB)</td>
</tr>
<tr>
<td>This resembles a lot the book the Jehovah's witnesses made. But here, it is only NT. (French PB)</td>
</tr>
<tr>
<td>Everything interests me in the book. (French PB)</td>
</tr>
<tr>
<td>Nothing is poor. (French PB)</td>
</tr>
<tr>
<td>This helps to remember the stories of the Bible. Pictures are attractive and they can be quickly understood. I like everything! (French PB)</td>
</tr>
<tr>
<td>This sums up the Gospels of the life of Jesus Christ and his mission. This attracts people with pictures and text balloons. This immerses us. One has the impression that they are</td>
</tr>
</tbody>
</table>
living in the same time period. The manner which he cried, which he prayed, shows how he lived during this time. It will be interesting to tell these stories to small children. The pictures are going to help them understand better. (French PB)

There are some errors in the sentences (page 21, top box on the right). The story was too summed up. One cannot understand the biblical text. If they can have more biblical information to the frames this will be good. (French PB)

I like the color, the realistic faces (e.g. Mary's face when she said "Yes, I believe.") One can read the faces. They are clear. One can understand easily. (French PB)

This helps to read. Nothing is poor inside. (French PB)

The French is easy to read. Even someone who has level CM1 (5 years of formal education) can read and understand. (French PB)

Pictures and interpretations of pictures are good

Paper is good quality. The presentation is good. But a table of contents is missing to orient people where the stories are. (French PB)

It is interesting. Pictures attract the reader and make it easier to understand. (French PB)

The illustrations help teach and will especially help explain to children more easily. (French PB)

Responses to JM Picture Book in Fon

The comic book is very good because its content allows us not only to deepen our knowledge of the Fon language but especially to better understand the Word of God and stories about Jesus. The pictures are very appropriate and orientate people better.

It is good because of the contents and the nice illustrations.

It is good because this speaks about the life of Jesus.

I like the comic book well. Everything is good.

The colors are good, the words are properly chosen, the illustrations also. I like the book.

The drawings as well as the Fon language let us reflect on the story and give it clarity so that we don't need anyone to explain it for us. It will be necessary to put tone markings on orthography and punctuations.

It is because the characters of the book did something good that they are in the book today. We should also follow their example. What is not good (Page 28) are the dresses on both women with necklaces and earrings which resemble the clothing of the supporters of voodoo worship.

The Jehovah's Witnesses have made this type of book. I am very happy that the evangelical churches have begun to publish comic books as well. It will allow us to announce the Gospel to the illiterates by showing them pictures. It is like a film. Our children also are going to love it.

Drawings allow us to understand things well.

This book is a good thing because it is famous. It can serve to teach those who do not know how to read. They can see pictures and understand. When they begin to read the story they will want to see the end.

The book helps people to read. The pictures help us to imagine and better understand the words which they may not know how to read. Pictures sometimes explain words.

Example: "Lazarus, come out!" Then they see Lazarus coming out.

The fact that the book is written in Fon allows us to read and gives me great joy. The
stories are interesting.
It is like a novel and it interests me a lot. Most of the books are in French and those who know how to read in Fon don't have enough to read.

This speaks about the word of God. Nothing is poor.
I really like the story of the resurrection of Lazarus as well as the multiplication of the bread. Everything in the book pleases me.

This pleases me a lot because it speaks about Jesus.
The Word of God and illustrations are good.
The comic book brings me a lot of pleasure because it is written in my mother tongue.
The pictures can help to better remember the contents.
The illustrations can help to understand the Word of God. Everything is clear.
The illustrations are good and can help young and old. The writings also stimulate us to think.
The illustrations are good and help to better understand.
This book is very good. I don't find anything bad inside. If this book was available a long time ago we would definitely known how to read Fon already. Today, I shall start reading the Bible every day.
The way the story is put together makes me want to read it all.
The reading of the book allows me to acquire more knowledge. I like everything in the book.
The pictures allowed me to understand the text better. Also the explanation which you gave at the beginning sure helped me know how to read it.
By reading the story, I better understood how Jesus performed miracles. That's why it’s such a good book.
We read the Bible but there are no pictures. Here, we see all that is happening while we read. It is good.
I note that this book can help us really understand the Word of God. If we read the Bible afterwards, we can remember the acts and the purpose of each person, this is thanks to the pictures in the comic book. I found the book not bad.
The comic book is good. The illustrations help us to understand and remember the text and know who is speaking.

**Responses to JM Picture Book in French among the Kabiye**
The document is good in and of itself. The pictures are nice. The truth is clear and visually in accordance with the Bible. It is very easy to read. (Text)
The fact that Jesus fed the crowd amazes me. I love this miracle. The second story interested me because it showed people that he was all-powerful. (Text)
The document interests me because they read and see pictures directly. (Text)
It is very good. (Text)
The text is understandable, this helps me better remember. (Text)
All who? I lived with the pictures. Everything is good and clear. (Text)
The pictures express the feelings of the characters in the story allowing for good understanding. (Text)
This shows us what is happening all at the same time. It is interesting. Even if you don't
understand Bible, once you see the pictures you can understand. Everything is good. (Text)

It is more clear and understandable in comparison with text. (Text)

By reading it, I see pictures that make me live the scene and I leave the theoretical for practical. It is good. (Text)

The pictures are pretty. Not only that, they help me to understand. (Text)

The pictures quickly remind me what is written in the New Testament. I saved a lot of time trying to understanding. (Text)

The pictures are great.

It gives me rapid understanding, the best way to memorize quickly and remember without forgetting because I saw pictures. (Text)

I see what I read, and it takes me toward a better understanding of the story. Everything is good. (Text)

It is very easy to understand. The presentation is very good. (Text)

Before, we read without seeing the characters, but now we live in their world through the pictures. Everything is good. (Text)

When I read with pictures I understand better. If not, it is good. (Text)

Here pictures allow us to understand better.

Pictures show much more.

While reading the comic book the images spoke to me. I have more of a taste for reading. I'd like to underline that the pictures are too small. (Text)

Reading is alive because you see the actors. Understanding is easy. They need to mention the names of the characters. (Text)

This book is clearer. It makes it easier to understand. Everything is good. (Text)

The text with pictures provides better understanding. Everything is good. (Text)

With the comic book it allows me to read because I am a lazy reader. Everything is good. (Text)

The comic book brings me to an understanding of the story. I can then imitate the document in the same way, meaning putting to practice the Word in my life. (Text)

With the comic book understanding is quick. Everything is good. (Text)

When I read this book, I understand more quickly than the text only.

The pictures help me to understand better. (French BD)

What pleases me is the pictures which show who is speaking. (French BD)

The comic book gives us more understanding with its pictures.

Little by little one can read when one sees the pictures. Everything is good. (French BD)

It is my own language I am reading. The pictures spoke or pointed out what I was seeing.

It is easy to teach or to understand. (French BD)

I wish the whole Bible would be done in the same way because everything is good. (French BD)

I liked all of this book. (French BD)

The pictures give life to the story because it resembles the scene. Everything is understandable. (French BD)

What I like is that when I read I see and it is easier. (French BD)

The pictures make us live the story. (French BD)

What pleased me is that besides words there are pictures and good understanding by the
<table>
<thead>
<tr>
<th>Reader (French BD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everything is good. (French BD)</td>
</tr>
<tr>
<td>With the pictures this guides you and allows a better understanding. (French BD)</td>
</tr>
<tr>
<td>It allows or makes easier education. (French BD)</td>
</tr>
<tr>
<td>Little by little one will read what one sees and what is written. (French BD)</td>
</tr>
<tr>
<td>I understand better with pictures. (French BD)</td>
</tr>
<tr>
<td>I am happy with this document because even a country peasant who reads it will understands with the pictures because he sees what takes place. (French BD)</td>
</tr>
<tr>
<td>It is good because this helps me to understand. (French BD)</td>
</tr>
<tr>
<td>The pictures are pretty and make understanding easier. (French BD)</td>
</tr>
<tr>
<td>The paper of the book and pictures are like photographs. It is good to read and look at. Everything is good. (French BD)</td>
</tr>
</tbody>
</table>

**Responses to JM Picture Book in Kabiye**

<table>
<thead>
<tr>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>The pictures express what is written. It is good.</td>
</tr>
<tr>
<td>The pictures help me to understand well.</td>
</tr>
<tr>
<td>The pictures explain to me the words in this book. It is clear.</td>
</tr>
<tr>
<td>Everything is good.</td>
</tr>
<tr>
<td>One reads and can understand well and does not get tired reading.</td>
</tr>
<tr>
<td>People believe that it is God who sent Jesus!</td>
</tr>
<tr>
<td>I really appreciate what I see and read.</td>
</tr>
<tr>
<td>I read and see the pictures all at once which give me an explanation. It is good.</td>
</tr>
<tr>
<td>What is good here is that I understand more easily what I read, more than if I read New Testament.</td>
</tr>
<tr>
<td>The stories pleased me. The pictures also.</td>
</tr>
<tr>
<td>What pleased me is that Marthe had faith that Jesus was going to revive Lazarus.</td>
</tr>
<tr>
<td>What is good is this: By reading and looking at pictures at the same time there is good understanding.</td>
</tr>
<tr>
<td>I see the pictures of the story, it is good.</td>
</tr>
<tr>
<td>Everything pleases me.</td>
</tr>
<tr>
<td>The pictures help me remember the story which I read. Everything is good.</td>
</tr>
<tr>
<td>Everything pleased me.</td>
</tr>
<tr>
<td>It helps to understand, I'm not too lazy to read it. Everything in it is pleasing.</td>
</tr>
<tr>
<td>The pictures allow me to understand quickly. It gives me desire to keep reading. It is very good.</td>
</tr>
<tr>
<td>The pictures help to increase my faith.</td>
</tr>
<tr>
<td>The pictures help us to understand quickly. I am pleased by it and am very happy.</td>
</tr>
<tr>
<td>We are seeing the people while we read.</td>
</tr>
<tr>
<td>The pictures make sure that we understand well what we read. It's as if what we're reading what we've seen before.</td>
</tr>
<tr>
<td>You see what you're reading.</td>
</tr>
<tr>
<td>What pleases me is when I read and see the pictures at the same time. There is nothing that displeases me.</td>
</tr>
<tr>
<td>What pleases me is that I read and see the pictures at the same time.</td>
</tr>
<tr>
<td>What pleases me is that I see pictures at the same time as I read. Everything is good.</td>
</tr>
</tbody>
</table>
The pictures help people understand what they are reading. It pleases me.
Appendix D

Word count and comprehension levels

After the research was completed, the number of words in the French text were counted and compared with the number of words in the French JMPB. The French JMPB had a little more than half the words of the text version. Since the scores where similar in the French JMPB verses the French text this would suggest that readers were able to understand just as well using less words with the pictures providing additional information.

Word counts

First Story

<table>
<thead>
<tr>
<th>Picture Book in French</th>
<th>118</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text in French</td>
<td>222</td>
</tr>
</tbody>
</table>

Second Story

<table>
<thead>
<tr>
<th>Picture Book in French</th>
<th>189</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text in French</td>
<td>305</td>
</tr>
</tbody>
</table>
Appendix E

The Impact of Pictures

Did the pictures significantly add information which helped the subjects respond correctly?

In the first story the picture of Jesus receiving a basket of bread and fish while his disciples discuss how to feed such a large crowd (page 20) seemed to help those who read the JMPB.

Figure E 1 Jesus receiving the five loaves and two fish

Question 7 in the first story “What was the reaction of the disciple after being asked to feed the crowd?”

<table>
<thead>
<tr>
<th></th>
<th>% of correct response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon reading French JMPB</td>
<td>63.33</td>
</tr>
<tr>
<td>Fon reading French text</td>
<td>46.67</td>
</tr>
<tr>
<td>Kabiye reading French JMPB</td>
<td>76.67</td>
</tr>
</tbody>
</table>
The responses from both the Fon and the Kabiye seem to indicate that this particular picture helped in their comprehension.

In the second story the picture of Lazarus coming out of the tomb embalmed in cloth (page 30) impacted the response to question 5, “What was done to the body of Lazarus after his death?”

![Lazarus in grave clothes](image)

Table E 2 Question 5, Second Story

<table>
<thead>
<tr>
<th></th>
<th>% of correct response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon reading the JMPB</td>
<td>96.67</td>
</tr>
<tr>
<td>Fon reading French text</td>
<td>80.00</td>
</tr>
<tr>
<td>Kabiye reading JMPB</td>
<td>100.0</td>
</tr>
<tr>
<td>Kabiye reading French text</td>
<td>85.00</td>
</tr>
</tbody>
</table>
Also in the second story, question 7 asked, “What did Jesus ask the people to remove from the tomb” (page 30)?

Figure E 3 Jesus instructing that the stone be removed from the grave entrance

![Image of Jesus instructing that the stone be removed from the grave entrance]

Table E 3 Question 7, Second Story

<table>
<thead>
<tr>
<th></th>
<th>% of correct response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fon reading the JMPB</td>
<td>93.33</td>
</tr>
<tr>
<td>Fon reading French text</td>
<td>86.67</td>
</tr>
<tr>
<td>Kabiye reading JMPB</td>
<td>100.0</td>
</tr>
<tr>
<td>Kabiye reading French text</td>
<td>91.67</td>
</tr>
</tbody>
</table>

The graphic depicting the round stone in front of Lazarus’ tomb helped the subjects to respond. In the case of the Kabiye, not one person missed this question, suggesting that the image helped the readers.

An analysis was also done on the two stories in the JMPB in French by breaking down the story into three components: textual information, image information, and
supplementary information. This helps to see, in some measure, how these different components work together to construct a narrative. This analysis can be found in Appendix B.
References


Tomite, Adrian. 1998. Letters to Optic Nerve. *Optic Nerve* 5 (Feb.).


About the Author

Rob Thar is an administrator with SIL International serving in the countries of Togo and Benin West Africa since 1995. Rob and his wife and two sons live in Cotonou, Benin.