# Introduction

## Importance of literacy

Poor literacy skills at an early age can have persistent negative effects on an individual throughout childhood and even into adulthood. For example,

- A child who is a poor reader in 1st grade is 88% likely to be low in 4th grade.
- Poor literacy in 2nd grade predicts poor high school performance.
- Low literacy skills negatively affect all aspects of life: e.g., jobs, health care, leisure activities.

## Practical concerns

There is benefit in identifying early indicators (predictors) of literacy outcomes. Including:

- Reduce Kindergarten gap.
- Design effective early interventions.

How can professionals identify children at risk in a timely manner? Common methods include:

- SES, sensory deficits, cognitive and/or language deficits, family literacy.
- Pre-literacy indicators such as book knowledge, phonemic awareness, and oral language proficiency.

# Research Design

## Basis of Reading

Reading is known to be based on language skills such as,

- Phonemic awareness.
- Syntax.
- Vocabulary.

As such, language skill deficits at an early age can be a reliable risk factor for later reading deficits.

However, the relationship between language and literacy is only characterized in general terms in the research literature. Language is a complex set of skills, and different studies will demonstrate varying degrees of relationship, depending on the aspect of language being tested (Roth, Speece, & Cooper, 2002).

In addition, longitudinal studies on the relationship between early language and reading are rare.

Therefore, it is beneficial to utilize longitudinal data to investigate the connection between the early language abilities of preschool children, and their later reading ability.

# Participants

Participants in this study were drawn from an archived longitudinal dataset of children who were provided early intervention services by a university laboratory school over a four-year period in the mid-1980s. 206 children in the dataset.

- Referred for delays in speech, language, social-emotional skills, cognition or motor skills.

# Measures

## Peabody Individual Achievement Test (PIAT)

The PIAT is an individually administered standardized test of academic achievement that has been shown to have good measurement sensitivity, test-retest reliability, and correlation with other achievement measures (Sattler, 1998). Two subtest scores were used,  
- Reading recognition – a decoding task.
- Reading comprehension.

## McCarthy Scales of Children’s Abilities

The verbal scale is comprised of five subtests including: a) pictorial memory, b) word knowledge, c) verbal memory, d) verbal fluency, and e) opposite analogies.

- Verbal raw score.
- Disability @ age 9.
- Socio-economic status (SES).

# Results

The finding that language level contributes more to reading outcomes with older children than with younger may point to the nature of the reading task required at different ages. Early readers focus on simple language, and reading is mostly a decoding task, while older readers begin to read for information and comprehension is a large part of the reading task.

It may be that a quality language intervention will create long-term results that are difficult to capture in a period of a few years. It may be that we lack assessment that is sensitive enough to detect the early differences that translate into later reading difficulties. It may also be advantageous to consider a multi-layered assessment approach that considers a broad range of readiness skills including attention, memory, and problem solving.

## Multiple Regression

4 analyses:

- Dependent variables – Reading recognition @ 6 and 9 with the independent variables of language ability, SES and disability status.
- Dependent variable – Reading comp. @ 6 and 9 independent variables of language ability, SES and disability status.

Hierarchical Linear Regression, the variables were entered in the following order:

- Language ability, -> disability, -> SES.

$p < .05$ was used to determine significant effect.

## Scholarly Significance

As seen in Figure 1, there is a moderate relationship between reading recognition (decoding), reading comprehension, and later reading achievement at age 6. The value of .248 & .221 indicated that the child’s language ability at age 3 can explain approximately 26% of their ability to read words, and 22% of their ability to understand what they have read at age 6. However, this relationship is stronger at age 9, where language ability explains 39% of the children’s ability to read words, and 40% of their ability to understand what they have read.