

Article review on quantitative research critique

[Countries](#), [China](#)



Introduction

Quantitative research is a systematic empirical study of a phenomenon using mathematical, statistical or computational techniques. Quantitative research seeks to investigate the relationship between a dependent variable and an independent variable or variables. This paper seeks to critique a quantitative study that employs an experimental approach. For this purpose, this paper chooses an article by Min Wang, Charles Perfetti and Ying Liu titled “Chinese-English Biliteracy Acquisition: Cross-Language and Writing System Transfer”

Summary of the Study

The study sought to investigate the relationship between cross-language and writing system in Biliteracy acquisition by students who were learning to read in two diverse writing systems- English and Chinese. To this end, a sample of 46 Mandarin-speaking students were selected and tested for both their first language and second language reading skills which was Chinese and English respectively. The researchers designed comparable experiments in both English and Chinese with a bias two reading processes; orthographic and phonological processing. The researchers then tested the word reading skills under both writing systems. The researchers found out that Chinese onset matching skills have a significant correlation with English onset matching skills and rime matching skills. The research revealed that Pinyin, a phonetic system that is often employed in teaching children how to read Chinese characters, had a high correlation with English pseudoword reading. In addition, tone processing skill in Chinese contributed significantly to the

variation in English pseudoword reading even after considering the effect of English phonemic-level processing skill. On the other hand, orthographic processing skill under the two systems did not have any significant correlation. The researchers concluded that bilingual reading acquisition is influenced by orthographic skills and shared phonological processes.

Reasons for Using a Quantitative Approach

The researchers did not expressly indicate why they choose a quantitative approach to their study. However, the fact that they were interested in determining causal relationship is a pointer to why they opted for a quantitative approach. The researchers were interested in determining whether there is a relationship between bilingual reading acquisition (dependent variable) and orthographic skills and shared phonological processes (independent variables). Causal relationships can only be determined using a quantitative approach. In addition, quantitative approach reduces the researchers' bias because the results are based on empirical observations and quantitative data limiting the avenues for researchers to include the subjective opinions. Therefore, a study that employs a quantitative approach is often considered objective thus concretizing the validity of the research findings .

Literature Review

The researchers discussed key information on the subject under consideration using appropriate and relevant literature. The researchers used literature by various authors to discuss cognitive consequences of learning to read under different writing systems including Chinese, English

and Spanish. The researcher also used recent research findings to discuss cross-language transfers in bilingual acquisition in French-English and Spanish- English. Reviewing other studies done on the same topic was appropriate because it was important in refining the research methodology by building on the strengths on previous researches and learning from their mistakes to avoid the same pitfalls.

Research Question

The research question for the study was: Is bilingual reading acquisition a joint function of shared phonological skills and writing system specific skills? From the research question, the researchers developed the study hypothesis that bilingual reading acquisition is a joint function of shared phonological skills and writing system specific skills. The research question was appropriate. This is because it adequately covered the research topic that was of interest to researchers. However, the researchers should have been more specific to their topic. The researchers were only specifically interested in Chinese-English biliteracy acquisition which is not reflected in the research question.

Experimental Design

The researchers performed experiments using both English tasks and Chinese tasks with the intention of identifying a child's manipulation and differentiation abilities between phonological units in both spoken Chinese and English. An experimental design was appropriate in determining the correlation between the key variables under investigation. In addition, an experimental design was appropriate because the researchers could

manipulate the variables to determine their effect. The researchers did not clearly state whether they used a true experimental design or a quasi-experimental design. However, a true experimental design was not possible because random assignment of the study participants is difficult since the researchers were dealing with human beings. Therefore, the researchers must have used a quasi-experimental design. In addition to an experimental design, the researchers should have used a phenomenological research design which is an effective research tool in bringing to the fore the people's perceptions and experiences. It should be appreciated that since we are dealing with children, who are human beings, their perceptions and experiences are equally important in analysing the subject matter.

Sample Size

Sampling Strategy

The researchers selected a sample from the targeted population by deliberately selecting Chinese immigrant students in Washington DC to constitute the sample. The researchers used judgement sampling. This sampling technique was appropriate since it ensured the number of male and female were almost equal; there were 24 boys and 22 girls. However, non-random sampling could have resulted in bias sampling of the respondents. The researchers should have used simple random sampling to eliminate the risk of biasness in the sample selected, increase independence of the study results, increase both internal and external validity of the parameters calculated during the study and accord the study a more scientific feature .

The researchers selected the entire sample from Washington DC. This was

prudent since Washington DC is a metropolitan city with immigrants from all over the world. Hence a sample obtained from Washington DC could be representative of the whole world. This is evident from the descriptive statistics of the sample: of the 46 participants, 27 were born in the U. S, 17 were born in mainland China and 2 were born in Europe . However, picking the entire sample from one area may have resulted in an unrepresentative sample. Although, Washington DC is a metropolitan city, the possibility that there are measurable and immeasurable environmental factors specific to Washington DC that may influence the results that cannot be ruled out.

Data Collection Tools

The study relied on primary data. Data was collected directly from the study participants and recorded by the researchers using computers. The researchers used closed ended questions. Closed ended questions made it simpler to code the responses thus facilitating statistical analysis.

Data Gathered

The data gathered was qualitative data which was coded. Coding the data ensured that the data was quantitative to facilitate statistical analysis.

Data Analysis

The researchers used bivariate Pearson correlation tests. These tests were appropriate because the researcher was interested in analysing causal relationship. In addition, the researchers used regression analysis in analysing the collected data. Regression analysis was equally important in determining the nature of the relationship after establishing that a

relationship exists between the variables. Regression analysis was important in developing a model and in directly answering the study hypothesis.

Weakness of a Quantitative Approach

Quantitative approach to any study assumes that it is possible to manipulate the variables at various level and control or exclude other factors that are not of interest to the researchers. However, since we are dealing with human beings it is impossible to introduce lab-like conditions. In addition, it should be appreciated that since we are dealing with children, who are human beings, their perceptions and experiences are equally important in analysing the subject matter.

Interpretation of the Results

The researchers interpreted the obtained results correctly. All the relevant information regarding bivariate Pearson correlation was included. However, with regards to the regression analysis, the researchers only explained the explanatory power of the developed model but overlooked the coefficients of the independent variables and the signs of the coefficients and what they implied.

Discussion

The discussion adequately covered the key findings of the study. The only item that was left out is discussing the coefficients of the model that was developed and the nature of the relationship between the key variables under consideration.

Conclusion

The researchers concluded that bilingual reading acquisition is influenced by orthographic skills and shared phonological processes. The conclusion was based on the findings. The researchers did not attempt to introduce any new findings or concepts that cannot be deduced from the study.

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