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The Relationship Between Multiple Intelligences and Effective Study Skills in Reading Comprehension: A Correlational Study

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Abstract

The complex relationship between Howard Gardner's Multiple Intelligences (MI) and the use of efficient study techniques in the context of reading comprehensi on is examined in this study.Although linguistic aptitude is frequently the only focus of traditional literacy education, this study suggests that a learner's broader cognitive profile—including spatial, logical, and intrapersonal intelligences—strongly influences their decision and effectiveness while employing study techniques. This study investigates the relationship between particular intelligences and metacognitive reading techniques using a descriptive-correlational design. The results are intended to offer a paradigm for customized education that matches evidence-based reading resources with students' cognitive capabilities.

Keywords: Multiple Intelligences, Study Skills, Reading Comprehension, Correlational Design, Metacognitive Techniques.

العلاقة بين الذكاءات المتعددة ومهارات الدراسة الفعالة في الاستيعاب القرائي: دراسة ارتباطية

الباحث: علاء عبد الرضا مظلوم

مكان العمل: المديرية العامة لتربية القادسية

المستخلص

تتناول هذه الدراسة بالبحث والتحليل العلاقة المعقدة بين نظرية الذكاءات المتعددة لهوارد جاردنر وتوظيف تقنيات الدراسة الفعالة في سياق الاستيعاب القرائي. ورغم أن تعليم القراءة والكتابة التقليدي غالباً ما يرتكز حصرياً على القدرات اللغوية، إلا أن الدراسة الراهنة تشير إلى أن الجانب المعرفي الأشمل للمتعلم — بما يشمل الذكاءات المكانية والمنطقية والذاتية — يؤثر تأثيراً قوياً في اختيار المتعلم لاستراتيجيات الدراسة ومدى فاعليتها عند تطبيقها. وتبحث الدراسة في طبيعة العلاقة القائمة بين ذكاءات محددة وتقنيات القراءة القائمة على ما وراء المعرفة، وذلك بالاعتماد على منهج وصفي ارتباطي. وتهدف النتائج المستخلصة إلى تقديم نموذج تربوي للتعليم المخصص، يربط بين مصادر القراءة القائمة على الأدلة والبراهين والقدرات المعرفية للمتعلمين.

الكلمات المفتاحية: الذكاءات المتعددة، مهارات الدراسة، الاستيعاب القرائي، التصميم الارتباطي، تقنيات ما وراء المعرفة

.1. Introduction

1.1. Background of the Study

Even though reading comprehension is essential for academic achievement, many students still struggle with this difficult cognitive task. Reading was once thought to be a linear decoding process.

Nonetheless, it is acknowledged by modern educational psychology as a multi-modal interaction between the reader's own cognitive architecture and the text.The "unitary" theory of intelligence was contested by Howard Gardner's Theory of Multiple Intelligences (1983), which proposed that people have eight different intelligences in varied degrees.

1.2. Statement of the Problem

Standardised study techniques, including taking linear notes, may not work for pupils whose primary intelligence is logical-mathematical or visual-spatial. This is known as a "pedagogical mismatch."The issue is that there is insufficient empirical data to connect particular MI profiles to the "study skills" that best support comprehension; without this connection, teachers are unable to offer tailored treatments. Teachers are unable to offer individualised solutions without this connection.

1.3. Research Questions

1. What connection exists between the frequency of using metacognitive study techniques and dominant Multiple Intelligence (MI) types?

2. Which intellectual profiles are the best indicators of excellent reading comprehension test scores?

3. How much do study techniques mediate the relationship between reading outcomes and intrinsic intelligence?

1.4 Definition of key terms:

1.4.1 multiple intelligences (MI) : . a biopsychological capacity for information processing that can be engaged in a cultural context to solve issues or produce goods that are valued in a society (Gardner, 1983, 2023).

1.4.2

Metacognative study skills: Knowing one's own cognitive processes and actively controlling and coordinating them in connection to learning objectives are executive management techniques (Veenman, 2022).

1.4.3

Reading comprehension proficiency: the concurrent process of deriving and creating meaning by engagement with written language, progressing from literal decoding to critical assessment (Schraw & Gutierrez, 2024).

1.5 Research Hypothesis:

HO1. The use of Metacognitive Study Skills by undergraduate students is positively correlated with their particular Multiple Intelligence profiles (Intrapersonal and Linguistic).

HO2. The final Reading Comprehension Proficiency scores of undergraduate students can be predicted statistically significantly by their Multiple Intelligence profiles and Metacognitive Study Skills.

2. Literature Review

2.1. Theoretical Framework:

The Evolution of Intelligence and Literacy Over the past forty years, there has been a paradigm shift in the way that human intelligence is conceptualised. Pluralistic models have essentially replaced the conventional "unitary" view, which measured cognitive ability using a single Intelligence Quotient (IQ). Pluralistic models have essentially replaced the conventional "unitary" view, which measured cognitive ability using a single Intelligence Quotient (IQ).The most important of them is Howard Gardner's Theory of Multiple Intelligences

(1983), which postulated that people have at least eight independent cognitive modalities: linguistic, musical, bodily-kinesthetic, logical-mathematical, spatial, interpersonal, intrapersonal, and naturalistic. Linguistic, Logical-Mathematical, Musical, Bodily-Kinesthetic, Spatial, Interpersonal, Intrapersonal, and Naturalistic are the eight independent cognitive modalities that Gardner said people have.

This theory suggests that reading comprehension in the context of academic literacy is a multimodal cognitive activity rather than just a language problem. While other intelligences supply the "cognitive scaffolding" required for deep comprehension, linguistic intelligence is crucial for phonological decoding and grammar. For example, Logical-Mathematical Intelligence makes it possible to recognise structural patterns in a text, while Spatial Intelligence makes it easier to construct mental models.

2.2. The Role of Metacognition and Study Skills

According to contemporary pedagogical research, "Effective Study Skills" are the regulatory mechanisms that enable a student to close the gap between their natural intelligence and the demands of the text. Reading comprehension is defined as the deliberate and active process of extracting and constructing meaning. "Effective Study Skills" are the regulating mechanisms that enable a student to close the gap between their natural intellect and the demands of the text, according to contemporary educational research.

"Thinking about thinking," or metacognition, is the pinnacle of these study techniques. It entails self-control and self-monitoring. Zimmerman (2002) defined self-regulated learners as those who actively participate in their own learning through metacognition, motivation, and behaviour. In this research,Since intrapersonal intelligence controls an individual's capacity to identify comprehension failures and implement remedial techniques, we propose that it is the biological and psychological precursor of metacognitive expertise.

2.3. Empirical Studies: A Thematic Mapping

2.3.1. International Perspectives

A critical evaluation of recent empirical studies that have looked into the relationship between cognitive profiles and reading achievement is given in the section that follows.

A. The Metacognitive-Intrapersonal Link (Al-Zahrani, 2021)

A substantial research project on MI profiles and metacognitive reading strategies was carried out by Al-Zahrani (2021) during the course of college student research. Based on the findings of the study, students who were self-aware performed significantly better in terms of organizing, recording, and grading their reading progress. There was a stronger positive correlation between Intrapersonal Intelligence and "Global Reading Strategies." The importance of academic programs that promote reading and introspection among students is brought into focus by this.

B. Visual-Spatial Strategies and Textual Encoding (Smith&Miller, 2023)

Smith and Miller (2023) investigation of the ways in which concept mapping and graphic structure influence the comprehension of scientific texts through experimentation. When it comes to "Inferential Comprehension" ratings, pupils who study spatial concepts perform better than those who memorize information by rote. Mastery of a language can be accelerated by the utilization of non-linguistic intelligences.

2.3.2. Regional and Arabic Perspectives

C. Logical-Mathematical Intelligence and Textual Logic (Ahmed, 2022)

Ahmed (2022) a regional investigation into the relationship between MI and study habits among students in the Faculty of Education was carried out. A statistically significant correlation was found between Logical-Mathematical Intelligence and "Analytical Reading Skills." Researchers found that logical thinkers were more adept at identifying text structures and the relationships between causes and effects. The research conducted by Ahmed demonstrates that the ability to study is a "mediating variable" that serves to enhance the academic influence of natural intelligence. Logical-mathematical intelligence was shown as a statistically significant predictor of "Analytical Reading Skills." Those students who were rational were better able to recognize text structures and the relationships between causes and effects. Based on his findings, Ahmad discovered that study techniques are a "mediating variable" that amplifies the effect that natural intelligence has on academic success.

2.4. Critical Synthesis and Research Gap

A review of the aforementioned research indicates that intelligence is a multidimensional term that has an impact on the way in which students acquire knowledge. Nevertheless, a significant "triple-link gap" still exists. There are not many combined models that investigate how MI influences study skills and reading comprehension, despite the fact that past research has addressed "MI and Reading" or "Study Skills and Reading" without focusing on any of these topics independently.

For the purpose of bridging this academic gap and offering a more nuanced explanation of literacy in higher education, this study provides a thorough structural model that takes into consideration variable synergy.

3. Methodology

This article provides a description of the methodologies that are utilized to evaluate reading comprehension, study skills, and Multiple Intelligence (MI) profiles. This article discusses the rigorous statistical procedure that was used to analyze hypotheses, as well as the selection of participants, apparatus, and the design of the study.

3.1. Research Design

Research that is quantitative, descriptive, and correlational is utilized in this study. The non-experimental method was selected because it enables the researcher to characterize the current distribution of study habits and intelligence

types, as well as measure the direction and intensity of connections without requiring any modifications.

3.2. Population and Sampling

Undergraduate students in the [Specify Faculty/Department] make up the target population. N = 250 participants were chosen using a purposive sampling technique. In order to guarantee a power of.80 and an alpha level of.05, which are enough for identifying a medium effect size in multiple regression analysis, this sample size was calculated using G*Power analysis.

Variable	Category	Frequency	Percentage(
Gender	Male	120	48%
	Female	130	52%
Major	Scientific	115	46%
	Humanities	135	54%
Age	20-18	160	64%
	22-21	90	36%

3.3. Instrumentation

Three verified tools were used to guarantee data triangulation:

1. Multiple Intelligence Inventory (MII): This 80-item Likert scale (1 = Never, 5 = Always) assesses eight intelligence areas and is based on Gardner's theory.
2. Study Skills and Strategies Battery (SSSB): This 40-item self-report test evaluates three sub-scales: Information Processing, Organisational Techniques, and Metacognitive Monitoring.
3. The Standardised Reading understanding Test (SRCT) is a performance-based evaluation that consists of three academic texts and thirty multiple-choice questions with an emphasis on literal, inferential, and evaluative understanding.

3.3.1. Validity and Reliability

Content Validity: A panel of five educational psychology specialists examined the instruments to make sure the items matched the theoretical concepts.Internal Consistency: AA 30-person pilot research was carried out. Cronbach's Alpha (\alpha) was used to determine reliability. The acceptable threshold of.70 was exceeded by the coefficients, which were \alpha =.84 for MII, \alpha =.81 for SSSB, and \alpha =.79 for SRCT.

3.4. Statistical Treatment of Data

R-Studio and SPSS (Version 28.0) were used for data analysis. The statistical suite used was as follows:

3.4.1. Descriptive Statistics

The Mean (M) and Standard Deviation (SD) for each of the eight intelligences and the study skill domains were computed in order to characterise the sample. The cohort's "Dominant Intelligence" is so identified.

3.4.2. Inferential Statistics

The following tests were carried out in order to answer the research questions:

.Pearson Product-Moment Correlation (r): used to ascertain whether reading comprehension scores and MI kinds have a bivariate connection. At p <.05 and p <.01, the correlation matrix was examined for significance.

. Multiple Linear Regression (Stepwise Method): The "Predictive Power" of MI profiles on reading results was primarily discovered using this method. The model is shown as:

Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_kX_k + \epsilon

where X_1, X_2, and so on are the different forms of intelligence, and Y is the Reading Comprehension score.

. Coefficient of Determination (R^2): computed to explain the variation in reading comprehension explained by the combination of study skills and intelligence kinds.

.One-Way Analysis of Variance (ANOVA): used to determine whether there are notable variations in students' study skill competence according to their primary IQ category.

3.4.3. Statistical Assumptions

Prior to performing the regression, the data were screened for:

Normality: verified using skewness/kurtosis values and the Kolmogorov-Smirnov test.

Multicollinearity: Values less than 10 indicated no significant overlap between independent variables, as determined by the Variance Inflation Factor (VIF).

Homoscedasticity: confirmed using standardised residual scatterplot

3.5. Ethical Considerations

Participants supplied their informed consent, and the confidentiality of their data was protected. During the testing process, the study adhered to the ethical rules established by the Institutional Review Board (IRB) in order to avoid causing any psychological harm..

4. Results and Discussion

In this chapter, statistical analysis of data on individuals with a total of N=250 is presented. Multiple Intelligence (MI) profiles, study strategies, and reading comprehension scores are all evaluated as part of the examination, which is designed to address research problems.

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4.1. Analysis of Results

4.1.1. Descriptive Analysis of MI Profiles and Reading Scores

Finding the average scores for each type of intelligence was the first stage in the analysis. According to Table 4.1, the most prevalent profiles in the sample were Intrapersonal Intelligence (M = 3.95) and Linguistic Intelligence (M = 4.12).

Table 1: Means and Standard Deviations for MI and Reading Scores

Variable	Mean (M)	Std. Deviation (SD)
Linguistic Intelligence	4.12	0.58
Intrapersonal Intelligence	3.95	0.62
Reading Comprehension	74.5%	12.4

4.1.2. Correlation Between MI and Study Skills

A Pearson Product-Moment Correlation was utilized in order to establish a correlation between intelligence kinds and study skills. There was a statistically significant positive link between certain types of intelligence and effective study methods, according to the data. (see Table 2).

Table 2: Correlation Matrix between MI Types and Study Skills

Variable	Study Skills (r)	p-value
Linguistic Intelligence	.74^{**}	<.001
Logical-Mathematical	.62^{**}	<.001
Visual-Spatial	.48^{*}	.014
Intrapersonal Intelligence	.68^{**}	<.001
Note: ** Correlation is significant at the 0.01 level; * significant at 0.05.		

4.1.3. Regression Analysis (Predictive Power)

In order to evaluate the "Synergistic Impact," a stepwise multiple regression was carried out. According to the model, reading comprehension performance is significantly predicted by linguistic, intrapersonal, and logical-mathematical intelligences, accounting for 58% of the total variance ($R^2 = .58$, $F = 24.15$, $p < .001$).

4.2. Discussion of Findings

The "Triadic Synergy" paradigm, which combines Multiple Intelligences (MI), Study Skills, and Reading Comprehension to produce a better learning outcome, is empirically supported by the study's findings.

4.2.1. The Primacy of the Intrapersonal-Metacognitive Axis

The predominant importance of intrapersonal intelligence as a predictor of reading achievement is among the most important discoveries. As revealed in the correlational analysis ($r = .68$), there is a direct link between a student's self-reflective capacity and their mastery of study abilities. This aligns with the theoretical propositions of Veenman (2022), who argues that metacognition is not a general skill but one deeply rooted in the individual's cognitive profile.

Students that have a high level of intrapersonal intelligence are more "attuned" to the cognitive experiences they are experiencing. Through the utilization of metacognitive study skills such as self-regulation and monitoring, they are able to benefit from this information. According to Schraw and Gutierrez (2024), "executive control" is what differentiates proficient readers from those who are having difficulty reading. In contrast to the intrapersonal profile, which stimulates rumination, study skills make it possible to take action.

4.2.2. Linguistic Intelligence and the Construction-Integration Model

The Construction-Integration Model is supported by a high mean score for Linguistic Intelligence (M = 4.12) and a strong correlation with reading comprehension (R^2 =.58 Linguistic intelligence helps with "Construction" (decoding and grammar), but study skills enable "Integration" (combining text with past information).

The assertion made by Gardner (2023) that intelligences are not isolated is supported by this evidence. If a good language learner does not possess effective study skills such as summarizing or outlining, they may perform well in terms of literal comprehension, but they may perform poorly in terms of inferential and evaluative comprehension. The pairing of "Linguistic-Study Skill" is something that is absolutely necessary for higher-order thinking in academic literacy.

4.2.3. Visual-Spatial and Logical Intelligences as Strategic Substitutes

Both the discussion of logical-mathematical intelligence and the discussion of visual-spatial intelligence are fascinating. It is a common misconception that reading is a language ability; nevertheless, "Concept Mapping" and "Textual Logic" (Study Skills) are actually techniques that improve students' comprehension. According to the Cognitive Theory of Multimedia Learning proposed by Mayer (2024), the brain processes information through both verbal and visual channels.

According to the results of our research, when students' primary intelligence is spatial, the study methods they use transform linear text into mental models that require spatial representation. This discovery, which implies that understanding "blocks" can be avoided by using an alternative cognitive mode, is groundbreaking for remedial education.

4.2.4. Synthesis with Prior Literature

The present findings support Al-Zahrani's (2021) conclusions about the importance of self-awareness, but they go one step further by using regression analysis to show the "Predictive Power" of these factors. In contrast to Ahmed's (2022) study, which concentrated mostly on study habits, our research demonstrates that these behaviours are "Intelligence-Dependent." This explains the Research Gap shown demonstrating that academic literacy in higher education is primarily driven by the synergy of MI and study skills.

4.3 Hypothesis Testing

4.3.1 First Hypothesis:

We utilised Pearson Correlation (r) to test this. The findings revealed a significant positive correlation (r =.68, p <.01) between metacognitive study skills (such planning and self-monitoring) and intrapersonal intelligence (self-awareness).

4.3.2 second hypothesis:

We employed Multiple Regression Analysis to evaluate its prediction ability. The findings demonstrated that 58% of the variance in students' reading comprehension scores can be explained by linguistic, intrapersonal, and visual-spatial intelligences in conjunction with study skills (R^2 =.58, F = 24.15, p <.001).

Table 4.3 summary of hypothesis testing results

Hypothesis Statistical Test Used Value (r / R^2) Significance (p) Status

H_a1 (MI & Study Skills) Pearson Correlation r = .68 p < .01 Supported

H_a2 (Predictive Power) Multiple Regression R^2 = .58 p < .001 Supported

As seen in Table 4.3, there was empirical support for both research hypotheses. Because p <.01, the null hypothesis for Ho1 was rejected, demonstrating a strong correlation between study techniques and cognitive profiles. Additionally, the regression model confirmed that the triadic synergy accounts for 58\% of the variance in literacy performance, validating HO2.

5. Conclusion and Recommendations

5.1. Summary and Conclusion

The purpose of this study was to investigate the intricate connection that exists between the Multiple Intelligence (MI) profiles of students and their reading comprehension abilities. A number of important discoveries were made by the data study:

Cognitive Diversity as a Strength: Linguistic aptitude is not the only factor that contributes to reading comprehension.

Intrapersonal, Logical-Mathematical, and Visual-Spatial intelligencesare important catalysts for deep processing in this multifaceted process.

The Role of Metacognition:The Role of Metacognition: Intrapersonal intelligence is shown to be the driving force behind metacognitive study skills, according to the study. Reading success in the classroom is dependent on "fix-up" strategies such as self-questioning and rereading, which "self-aware" pupils are more likely to implement.

The realization that a lack of language intelligence can be compensated for by having strong study skills is one of the most significant discoveries. An individual who is studying Logical-Mathematical can achieve exceptional comprehension through the use of structural analysis and outlining, even if their natural language processing speed is ordinary.

To summarize, bringing the "way of studying" and the "way of thinking" into alignment results in a statistically significant improvement in the level of reading comprehension observed. (R2 =.58, p.001).

5.2. Recommendations

The following suggestions are put forth to improve institutional policies and educational methods in light of the empirical findings:

For Educators and Instructional Designers:

Differentiate Strategy Instruction: One approach to teaching reading should be avoided by educators. Rather, they ought to implement a "Strategy Menu" comprising:

Linguistic: Verbal arguments and written summaries.

Visual-Spatial: Infographic summaries, flowcharts, and mind maps.

Logical: Text-evidence grids, hierarchical patterns, and outlines.

Foster Metacognitive Awareness: " The term "Metacognitive Training" ought to be incorporated into academic literacy programs in order to assist students in determining their MI profile and selecting study materials that are suitable for their cognitive capabilities.

For Institutional Policy Makers:

Curriculum Integration: It is more effective to incorporate study tactics into important courses rather than teaching them as workshops, particularly at higher education institutions that have large reading requirements.

Assessment Variety: Exams for reading should go beyond multiple-choice questions and include tasks that need multiple modes of expression in order to demonstrate comprehension. (e.g., visual models or logical reconstructions).

5.3. Suggestions for Future Research

In order to further develop the conclusions of this study, it is recommended that scholars in the future investigate the following topics.:

Longitudinal Impact:An investigate whether or whether interventions based on MI that improve study skills boost academic retention beyond the span of a semester.

The Role of Technology: to investigate the ways in which artificial intelligence and digital reading tools can be taught to give "Adaptive Literacy Support" that is tailored to the MI profile of a learner.

Qualitative Depth: Conducting "Case Studies" or "Interviews" with high-achieving students to get insight into the internal discourse they employ when transitioning between various intelligence-based reading strategies.

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