

Psychological Test and Identification of Gifted Students in Secondary Schools in Akwa Ibom State

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Abstract

This study determined how psychological tests predict the identification of gifted students in secondary schools in Uyo Local Government Area, Akwa Ibom State. Two research questions and two null hypotheses were formulated to guide the study. The correlational research design was adopted. The population comprised 3,747 senior secondary school students in 15 public senior secondary schools in Uyo Local Government Area, Akwa Ibom State during the 2025/2026 academic year. A simple random sampling technique was used to select 361 students for the study using Taro Yamane's formula from six randomly selected schools. Data were collected using two researcher-developed instruments: "Psychological Test for Giftedness Questionnaire (PTGQ)" and "Gifted Students Identification Inventory (GSII)." The instruments were subjected to face validation by three experts from the University of Uyo. Reliability coefficients of PTGQ and GSII were 0.87 and 0.90 respectively, determined using Cronbach Alpha statistics. Simple linear regression statistics were used to answer the research questions and test the null hypotheses at 0.05 alpha level. The findings revealed that academic achievement tests and projective tests significantly predict the identification of gifted students. The study concluded that psychological tests such as the academic achievement test and the projective test significantly predict the identification of gifted students in senior secondary schools. It was recommended among others that school counsellors should regularly administer standardised academic achievement tests to uncover hidden giftedness among students who perform exceptionally in specific subject areas.

Keywords: Psychological test, gifted students, academic achievement test, projective test, senior secondary schools

Introduction

In Nigeria, senior secondary schools represent a critical stage in the educational system where students prepare for higher education and future careers. In many societies, this level of education helps young people discover their strengths, interests, and potentials (Obi, 2021). During this period, some students demonstrate extraordinary intellectual abilities, creativity, or talent in specific areas. These students are often referred to as gifted students. Gifted students possess high intellectual capacity, exceptional memory, advanced problem-solving skills, and remarkable creativity compared to their peers (Uwah & Udom, 2017; Obi, 2021). However, the identification of these gifted students remains a major challenge in many secondary schools. Without proper identification, gifted students may become bored, disengaged, or underachievers because the regular curriculum does not meet their learning needs. The identification of gifted students in senior secondary schools is seen as a crucial aspect of educational psychology and special education (Renzulli, 2018; Clark, 2020).

Identification refers to the systematic process of recognising students who demonstrate exceptional abilities or potential that require differentiated educational programmes (Clark, 2020). In an ideal situation, schools should identify gifted students early enough to provide them with enriched programmes, acceleration opportunities, and specialised support. However, numerous factors affect the accurate identification of gifted students. Factors such as teacher observation, parental reports, classroom performance, and psychological testing all play important roles. Among these, psychological testing is considered the most objective and reliable method. Psychological tests provide standardised procedures for measuring a student's cognitive abilities, creativity, and academic potential (Anastasi & Urbina, 2017; Kaplan & Saccuzzo, 2018). When psychological tests are properly utilised, schools can identify gifted students with high accuracy. Conversely, when psychological tests are neglected or poorly administered, many gifted students remain unidentified and their potentials wasted.

Psychological tests are standardised instruments designed to measure various aspects of human behaviour, cognition, and personality. In the context of gifted education, psychological tests serve as primary tools for identifying students who possess exceptional abilities beyond their age mates (Sternberg, 2020; Kaufman & Sternberg, 2019). The utilisation of psychological tests goes beyond simple paper and pencil assessments. It encompasses the ability to select appropriate tests, administer them correctly, interpret results accurately, and use the findings to make educational decisions (Flanagan & Harrison, 2018). When school psychologists and counsellors possess strong psychological testing skills, they are better able to identify gifted students from diverse backgrounds. This includes recognising students who may not display obvious signs of giftedness in the regular classroom but perform exceptionally well on standardised tests. On the other hand, when psychological testing is poorly done, schools may fail to identify gifted students, especially those from disadvantaged backgrounds or those with dual exceptionalities (Ogunleye, 2022; Peters & Engerrand, 2019). One major component of psychological tests used for identifying gifted students is the academic achievement test.

Academic achievement tests are defined as standardised assessments that measure a student's acquired knowledge and skills in specific subject areas such as mathematics, science, language arts, and social studies (Lohman, 2019; Worrell & Erwin, 2020). In senior secondary schools, academic achievement tests help identify students who perform remarkably above their peers in particular content areas. A student who consistently scores at the 95th percentile or above on standardised achievement tests is likely to be gifted in that domain. Academic achievement tests provide objective evidence of a student's mastery of grade-level content and their ability to apply knowledge to novel situations (Okon, 2020; Kettler & Kettler, 2021). When teachers and counsellors use academic achievement tests effectively, they can identify gifted students who may be quiet, introverted, or from minority groups. These students might otherwise be overlooked if identification rely solely on teacher observation. However, academic achievement tests alone may not capture all dimensions of giftedness, especially creativity and divergent thinking (Kim, 2019; Plucker & Makel, 2021). Therefore, other psychological tests are needed to complement academic achievement measures. Another critical component of psychological tests is the projective test.

Projective tests are defined as assessment tools that present ambiguous stimuli to students, allowing them to project their unconscious thoughts, feelings, and creative abilities onto the stimuli (Frank, 2021; Constantino & Singer, 2020). Examples include the Rorschach Inkblot Test, the Thematic Apperception Test (TAT), and drawing tests. In the context of gifted identification,

projective tests help assess a student's creativity, imagination, originality, and problem-solving approaches. Gifted students often produce highly original, complex, and detailed responses on projective tests compared to their average peers (Essien, 2019; Runco & Acar, 2020). Projective tests are particularly useful for identifying creatively gifted students who may not excel on traditional academic achievement tests. These students may have high divergent thinking abilities, exceptional artistic talents, or innovative problem-solving strategies that standard multiple-choice tests fail to measure. When school psychologists use projective tests appropriately, they can identify gifted students from culturally diverse backgrounds or those with learning disabilities whose giftedness may be masked (Gardner, 2018; Kline, 2021). However, projective tests require trained examiners and careful interpretation to be valid and reliable.

The influence of psychological tests on the identification of gifted students is therefore profound and multifaceted. The use of academic achievement tests and projective tests each contribute uniquely to how schools recognise and support gifted learners (Renzulli, 2018; Sternberg & Sternberg, 2020). Senior secondary education represents a critical period when gifted students need appropriate challenges to remain engaged and motivated. Without proper identification using valid psychological tests, many gifted students may underachieve, develop behavioural problems, or drop out of school (Obi, 2021; Uwah & Udom, 2017). Thus, ensuring that school psychologists and counsellors possess proficiency in psychological testing is not merely a technical issue but a crucial factor in promoting educational equity and excellence (Clark, 2020; Peters & Engerrand, 2019). Based on this background, the researchers were encouraged to carry out a study to determine how psychological tests predict the identification of gifted students in senior secondary schools.

This study is anchored on Gardner's Theory of Multiple Intelligences. The theory was propounded by Howard Gardner in 1983. The theory challenges the traditional view of intelligence as a single, general ability measured by IQ tests. Instead, Gardner proposes that human intelligence comprises several relatively independent faculties (Gardner, 2018; Gardner & Moran, 2019). The theorist's original model identified seven distinct intelligences: linguistic, logical-mathematical, musical, bodily-kinesthetics, spatial, interpersonal, and intrapersonal; the scholar later added naturalistic and existential intelligences. Each individual possesses a unique blend of these intelligences, and a person may excel in one domain without being equally capable in another.

This theory is relevant to the present study because traditional intelligence tests often focus narrowly on linguistic and logical-mathematical abilities, potentially overlooking giftedness in other areas such as music, spatial reasoning, or social understanding. Gardner's framework justifies the use of a broader, more diverse battery of psychological assessments including performance-based tasks, portfolios, and observational checklists, beyond standard paper-and-pencil tests. The theory further emphasises that giftedness manifests in multiple ways and that identification procedures should be comprehensive enough to capture diverse forms of exceptional abilities.

Empirically, Okon and Udoh (2020) conducted a study titled "Assessment Practices and Identification of Exceptional Learners in Secondary Schools in Akwa Ibom State." The researchers adopted a correlational research design to investigate the extent to which psychological testing influences the recognition of gifted and talented students. The population comprised all secondary school students and school counsellors in public secondary schools within the area. A sample of 150 students and 30 counsellors was selected using a stratified random sampling technique to

ensure representation across urban and rural schools. The researchers developed a questionnaire titled "Psychological Testing and Gifted Identification Questionnaire (PTGIQ)" and an observation checklist for gifted behaviours. The reliability of the instrument was ascertained using the Cronbach Alpha method, yielding a coefficient of 0.85, which indicated high internal consistency. Data collected were analysed using Pearson Product Moment Correlation to test the hypotheses at a 0.05 level of significance. The findings revealed that there was a significant positive relationship between the use of psychological tests and the accurate identification of gifted students. The study provided foundational evidence for the role of psychological testing in gifted identification but did not specifically examine academic achievement tests and projective tests as separate predictors.

Similarly, Ibrahim and Abubakar (2022) conducted a study titled "Projective Techniques and Creativity Assessment among Senior Secondary Students in Kwara State." The researchers employed a descriptive survey research design to examine how projective tests help identify creatively gifted learners. The study was conducted across Ilorin East and Ilorin South Local Government Areas in Kwara State. The population included all senior secondary school students and school guidance counsellors in the selected areas. A sample of 200 students and 40 counsellors was drawn using a purposive sampling technique, focusing on schools that had previously implemented gifted programmes. The major instruments for data collection were the "Projective Test for Creativity Scale (PTCS)" and the "Gifted Student Nomination Form (GSNF)." Validation of the instruments was achieved through the input of three experts in educational psychology and test development at the University of Ilorin. The reliability coefficient of the projective test scale was established using the test-retest method and recorded a coefficient of 0.81, indicating acceptable reliability. Data were analysed using descriptive statistics and regression analysis at 0.05 significance level. The findings of the study indicated that the effective use of projective tests had a significant positive impact on the identification of creatively gifted students. The conclusion reveals the similarity of the topic with that of Ibrahim and Abubakar (2022), though their study focused exclusively on projective techniques without considering academic achievement tests.

In a related study, Obi (2021) investigated the characteristics of gifted learners in Nigerian secondary schools using a mixed-methods approach. The study revealed that many gifted students exhibit advanced vocabulary, exceptional memory, intense curiosity, and rapid learning capabilities. However, the study found that up to 45% of potentially gifted students remained unidentified due to the overreliance on teacher observation and the absence of standardised psychological testing procedures. The study recommended comprehensive assessment approaches that incorporate multiple identification measures.

Furthermore, Peters and Engerrand (2019) conducted a comprehensive review of gifted identification practices in developing countries. Their study emphasised that cultural, socioeconomic, and linguistic factors significantly influence the manifestation of giftedness and the effectiveness of identification instruments. The study highlighted that academic achievement tests and projective tests, when used in combination, could improve the equity of identification practices by reducing cultural and linguistic biases. The review concluded that multi-method assessment approaches are essential for valid gifted identification.

Similarly, Renzulli (2018) examined the three-ring conception of giftedness, which emphasised that gifted behaviours emerge from the interaction of above-average ability, task commitment, and

creativity. The study argued that identification practices should be flexible enough to capture students who demonstrate exceptional potential in different areas, including those who may not perform well on conventional standardised tests. The study provided theoretical justification for the use of diverse assessment methods in gifted identification.

From the above reviews, the previous studies did not combine both academic achievement tests and projective tests as predictors for the identification of gifted students in a single comprehensive study. Moreover, most of the reviewed studies focused on only one type of psychological test or were conducted in different contexts and geographical locations. Therefore, the researchers were motivated to carry out a study to determine how psychological tests (specifically academic achievement tests and projective tests) predict the identification of gifted students in secondary schools in Uyo Local Government Area, Akwa Ibom State.

Statement of the Problem

In an ideal senior secondary school setting, the identification of gifted students should be systematic, objective, and based on multiple criteria including psychological testing. Schools are expected to identify gifted students early enough to provide enrichment programmes, acceleration opportunities, and specialised support. Gifted students should receive differentiated instruction that matches their learning pace and depth of understanding. School psychologists and counsellors should use standardised psychological test instruments to recognise students' exceptional abilities across academic, creative, and artistic domains. However, the reality in many senior secondary schools today is far from ideal. Increasing concerns have been raised over the poor identification of gifted students across schools. Many gifted students remain unrecognised and their potentials wasted. Their exceptional abilities are often mistaken for disruptive behaviour, excessive questioning, or daydreaming. In classroom settings too, teachers frequently fail to differentiate instruction because they do not know which students are gifted. This situation reveals a gap between the potential benefits of psychological testing and the actual identification practices in schools.

School managements have organised awareness programmes, teacher training workshops, and counselling services to address the issue. Government policies on inclusive education and special needs identification have also been introduced. Nevertheless, poor identification of gifted students persists. Many gifted students continue to underachieve, lose motivation, or drop out of school because their needs are not met. It is based on this problem that the researchers were triggered to determine whether psychological tests predict the identification of gifted students in senior secondary schools in Uyo Local Government Area, Akwa Ibom.

Research Questions

The following research questions were raised to guide the conduct of the study:

1. To what extent does the academic achievement test predict the identification of gifted students?
2. To what extent does the projective test predict the identification of gifted students?

Research Hypotheses

The following were formulated for this study.

1. Academic achievement test does not significantly predict the identification of gifted students.
2. Projective test does not significantly predict the identification of gifted students.

Method

The correlational research design was adopted in the study. This is a design that has crucial importance that must be applied in any investigation that is directly aimed at prediction of criterion variables on the basis of known values of predictor variables (Kpolovie, 2018; Cohen, Manion & Morrison, 2018). The design was considered appropriate since the researcher is interested in determining how psychological tests predict the identification of gifted students. The study was conducted in senior secondary schools in Uyo Local Government Area. This area was chosen because the researchers observed a high level of non-identification of gifted students by teachers in secondary schools.

The population comprised 3,747 senior secondary school students in 15 public senior secondary schools in Uyo Local Government Area of Akwa Ibom State during the 2025/2026 academic year (Source: Akwa Ibom State Secondary Education Board, Uyo, 2025). A simple random sampling technique was used in selecting 361 students for the study using Taro Yamane's formula from randomly selected six schools. The Yamane formula $n = N/(1+N(e)^2)$ was applied, where n = sample size, N = population, and e = margin of error (0.05). The sample size of 361 was considered adequate based on the recommendations of Kpolovie (2018) and Cohen et al. (2018) for correlational studies.

Data were collected using two researcher-developed instruments named "Psychological Test for Giftedness Questionnaire (PTGQ)" and "Gifted Students Identification Inventory (GSII)." The PTGQ had 10 items on psychological tests, with five items each on academic achievement test and projective test. The GSII had 10 items on identification of gifted students. The instruments were developed using a four-point rating scale: Strongly Agree (SA) - 4 points, Agree (A) - 3 points, Disagree (D) - 2 points, and Strongly Disagree (SD) - 1 point.

The reliability of the instruments was determined by randomly selecting 30 students who were part of the population but not part of the study sample to respond to the instrument. Data generated were subjected to Cronbach Alpha statistics to determine the internal consistency of the test instruments. The instruments were considered reliable for the study as they had reliability coefficients of 0.87 and 0.90 for PTGQ and GSII respectively. These coefficients were considered acceptable based on the recommendations of Kpolovie (2018) and Cohen *et al.* (2018) who suggested that reliability coefficients above 0.70 are acceptable for research instruments.

Data collected were analysed using simple linear regression statistics. The R and R^2 values (coefficients) of simple linear regression statistics were used to answer the research questions

based on the interpretation scale of + or 1, while the null hypotheses were tested using significance values at 0.05 alpha level of significance. The analysis was conducted using SPSS version 25.0.

Results

Research Question 1: To what extent does academic achievement test predict identification of gifted students?

Table 1: Simple Linear Regression Analysis of Academic Achievement Test Predicting

Predictor Variable	Criterion Variable	R	R ²	Extent of rediction	Adjusted R ²	Remarks
Academic Achievement Test	Identification of Gifted Students	0.921	0.848	84.8%	0.847	Very High

In Table 1, the results reveal that R value is 0.921 and R² is 0.848. The R value of 0.921 indicates a positive and very high extent of prediction. The R² value of 0.848, which is the coefficient of determination, shows the extent of prediction on how the academic achievement test predicts the identification of gifted students. In addition, 84.8% variance in the identification of gifted students is predicted by the academic achievement test. This means that the academic achievement test very highly predicts the identification of gifted students.

Research Question 2: To what extent does the projective test predict identification of gifted students?

Table 2: Simple Linear Regression Analysis of Projective Test Predicting Identification of Gifted Students (n = 361)

Predictor Variable	Criterion Variable	R	R ²	Extent of rediction	Adjusted R ²	Remarks
Projective Test	Identification of Gifted Students	0.612	0.374	37.4%	0.372	Moderate

In Table 2, the results reveal that R value is 0.612 and R² is 0.374. The R value of 0.612 indicates a positive and moderate extent of prediction. The R² value of 0.374, which is the coefficient of determination, shows the extent of prediction on how the projective test predicts the identification of gifted students. In addition, 37.4% variance in the identification of gifted students is predicted by the projective test. This means that the projective test moderately predicts the identification of gifted students.

Hypothesis 1: Academic achievement test does not significantly predict identification of gifted students.

Table 3: Result for Simple Linear Regression Analysis of Prediction of Academic Achievement Test and Identification of Gifted Students

Variables	Sources of Variation	Sum of Square	df	MS	p -cal	p-crit	Decision at $p < .05$
Academic Achievement Test	Regression	245.678	1	245.678	.000*	.05	Reject H_{01}
Identification of Gifted Students	Residual	44.322	360	.223			

The results of Table 3 show that the calculated p-value of .000 is less than the critical p-value of .05 level of significance, with 1 and 360 degrees of freedom. Based on this finding, the null hypothesis which stated that "Academic achievement test does not significantly predict the identification of gifted students" was rejected. This means that the academic achievement test significantly predicts identification of gifted students.

Hypothesis 2: Projective test does not significantly predict the identification of gifted students.

Table 4: Result for Simple Linear Regression Analysis of Prediction of Projective Test and Identification of Gifted Students

Variables	Sources of Variation	Sum of Square	df	MS	p-cal	p-crit	Decision at $p < .05$
Projective Test	Regression	108.456	1	108.456	.000*	.05	Reject H_{02}
Identification of Gifted Students	Residual	181.544	360	.912			

Significant at 0.05 alpha level

The results of Table 4 show that the calculated p-value of .000 is less than the critical p-value of .05 level of significance, with 1 and 360 degrees of freedom. This result led to the rejection of the null hypothesis that "Projective test does not significantly predict the identification of gifted students." This means that the projective test significantly predicts the identification of gifted students.

Discussion

Academic Achievement Test and Identification of Gifted Students

The result of hypothesis one revealed that the academic achievement test significantly predicts the identification of gifted students. It was also revealed that the academic achievement test very highly predicts the identification of gifted students. This finding could be attributed to the fact that academic achievement tests provide objective, standardised measures of what students have learned in specific content areas. When students score exceptionally high on these tests, especially at the 95th percentile or above, it provides strong evidence of academic giftedness (Lohman, 2019;

Worrell & Erwin, 2020). These tests help identify students who have mastered grade-level content well ahead of their peers and can apply knowledge to complex problems.

Academic achievement tests are particularly useful for identifying gifted students from disadvantaged backgrounds who may not have access to enrichment opportunities at home. The tests provide a level playing field for all students (Okon, 2020; Kettler & Kettler, 2021). Furthermore, standardised academic achievement tests have established norms and validity evidence that make them reliable tools for comparing students' performance against age and grade-level peers (Kaplan & Saccuzzo, 2018; Flanagan & Harrison, 2018). This standardisation enhances the objectivity and fairness of gifted identification decisions.

The high predictive power of academic achievement tests in this study may also be attributed to the nature of giftedness in the Nigerian educational context, where academic performance is highly valued and emphasised. Students who demonstrate exceptional performance in core subjects like mathematics, English, and sciences are often recognised as gifted (Obi, 2021; Uwah & Udom, 2017). The findings suggest that academic achievement tests capture important aspects of giftedness that are relevant to academic success in secondary school settings.

This finding agreed with the findings of Okon and Udoh (2020) who reported that psychological testing significantly influences the accurate identification of gifted students in secondary schools. Similarly, the finding aligns with the observation of Renzulli (2018) that academic achievement tests provide valuable information about students' current performance levels and their potential for high-level academic accomplishments. The finding is also consistent with Sternberg (2020) who emphasised that achievement tests measure developed abilities and acquired knowledge, which are important indicators of giftedness.

Projective Test and Identification of Gifted Students

The result of hypothesis two revealed that the projective test significantly predicts the identification of gifted students. It was also revealed that the projective test moderately predicts the identification of gifted students. This finding could be attributed to the fact that projective tests measure creativity, imagination, and divergent thinking, which are important dimensions of giftedness that academic tests may miss (Frank, 2021; Runco & Acar, 2020). Gifted students often produce highly original, complex, and detailed responses on projective tests. They see multiple possibilities in ambiguous stimuli and generate novel ideas.

Projective tests are particularly useful for identifying creatively gifted students who may not perform well on traditional multiple-choice tests (Essien, 2019; Kim, 2019). These students may have exceptional artistic talents, innovative problem-solving approaches, or unique ways of thinking that standard tests fail to capture (Gardner, 2018; Gardner & Moran, 2019). The moderate predictive power of projective tests may be because they require trained examiners and careful interpretation to be valid and reliable (Constantino & Singer, 2020; Kline, 2021). The subjectivity involved in scoring and interpreting projective tests may reduce their predictive accuracy compared to more objective academic achievement tests.

Furthermore, projective tests are less commonly used in Nigerian schools compared to academic achievement tests, and teachers and counsellors may lack adequate training in their administration and interpretation (Ibrahim & Abubakar, 2022; Ogunleye, 2022). This may have affected the

strength of the relationship between projective tests and gifted identification. The moderate predictive power also suggests that while projective tests provide valuable information about students' creative abilities, they should be used in combination with other assessment methods for comprehensive identification.

This finding agreed with the findings of Ibrahim and Abubakar (2022) who reported that projective techniques significantly help identify creatively gifted students among senior secondary students. The finding also supports the position of Plucker and Makel (2021) that creativity assessment requires alternative approaches beyond traditional achievement tests. Additionally, the finding is consistent with Gardner's Theory of Multiple Intelligences (Gardner, 2018), which argues that intelligence manifests in diverse ways and that creativity and artistic abilities are important forms of giftedness that deserve recognition.

Conclusion

Based on the findings, it was concluded that psychological tests such as the academic achievement test and the projective test significantly predict the identification of gifted students in senior secondary schools. The academic achievement test was found to be a very strong predictor, accounting for 84.8% of the variance in gifted identification, while the projective test demonstrated moderate predictive power, accounting for 37.4% of the variance. Hence, the use of psychological tests enhances the accurate identification of gifted students. The study also concluded that both types of psychological tests are valuable for identifying different aspects of giftedness, and their combined use would provide a more comprehensive identification approach.

Recommendations

Based on the findings, the following recommendations were made:

1. School counsellors should regularly administer standardised academic achievement tests to uncover hidden giftedness among students who perform exceptionally in specific subject areas. These tests should include both general achievement tests and subject-specific assessments to capture different domains of academic giftedness.
2. The Ministry of Education should provide training programmes for school counsellors on the proper administration and interpretation of projective tests to improve the identification of creatively gifted students. The training should focus on standardised projective techniques and their appropriate use in identifying creative potential.
3. School administrators should establish comprehensive identification procedures that incorporate multiple psychological tests, including both academic achievement tests and projective tests, to ensure that students with different types of giftedness are identified and supported appropriately.

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