

Critical Thinking Ability as a Predictor of Success in a Nontraditional Master's Degree  
Program in Adult and Continuing Education

Frederic W. Widlak  
Director of Field Research  
National College of Education  
2 South 361 Glen Park Road  
Lombard, IL 60148

Presented at the Midwest Research to Practice Conference in Adult and Continuing  
Education, Michigan State University, East Lansing, Michigan, October 8-9, 1987.

**Abstract**

This research-in-progress examines the predictive validity of the *Watson Glaser Critical Thinking Appraisal* (WGCTA) for forecasting master's degree students' attrition, achievement level, thesis progress, and program completion time in a field-based accelerated program in Adult and Continuing Education (ACE). In the fall of 1986, National College of Education (NCE) changed one of the admission requirements for this program from satisfactory performance on the *Miller Analogies Test* (MAT) to similar performance on the WGCTA. The appropriateness of the MAT content for NCE's nontraditional students was questioned and the WGCTA was chosen as an alternative. The current issue is the relative forecasting efficacy of the MAT and the WGCTA among predictor variables such as sex, age, race, marital status, geographic area, undergraduate major, time since baccalaureate degree, type of undergraduate institution, and junior-senior GPA. The results of multiple regression analysis and multiple discriminant analysis will be compared for the MAT and WGCTA.

CRITICAL THINKING ABILITY AS A PREDICTOR OF SUCCESS IN  
A NON-TRADITIONAL MASTER'S DEGREE PROGRAM IN  
ADULT AND CONTINUING EDUCATION

### **The Program**

The field-experience master's degree program in Adult and Continuing Education (ACE) at National College of Education (NCE) was established in 1982. Since its inception, this ACE program has enrolled about 150 students in clusters of about 15 students each. The cluster acts as a support group, drawing from each student's on-the-job experiences, as the entire group follows an accelerated schedule of weekly classes and individual study and research over a 13-month period. Each cluster is led by a primary instructor who teaches most of the 16 courses and serves as the thesis advisor to each student. Some of these 4- or 5-week courses are taught by secondary instructors who specialize in certain areas of expertise.

### **The Miller Analogies Test**

From the program's beginning until the fall of 1986, the admission requirements included a satisfactory score on the *Miller Analogies Test* (MAT), "... used for many years in screening students applying for admission to programs of graduate study at colleges and universities." (The Psychological Corporation, 1981, p. 5). The MAT manual describes it as

... 100 analogy items based on many areas of knowledge including literature, social sciences, chemistry, biology, physics, mathematics, and general information. The examinee is not required to be a specialist in any of these areas. An applicant for graduate school or for a high-level industrial position will have been exposed to much, if not all, of the precise information needed. The test items require their cognition of relationships rather than the display of enormous erudition... (p. 5)

The publisher's claims notwithstanding, after 4 years' experience with the MAT, the NCE ACE faculty concluded that a major reason for its lackluster performance as a predictor of student achievement in that specific program was indeed that the MAT places a strong premium on a vocabulary amassed through book learning in a traditional liberal arts curriculum. The majority of NCE's ACE applicants have baccalaureate degrees outside of

liberal arts and thus appear to be "culturally disadvantaged" for the MAT. These applicants also tend to be older and away from formal education longer than the applicants to more traditional graduate programs who probably comprise the bulk of the subjects in the MAT norm groups.

The search for an alternative to the MAT led to a review of the competencies to be attained by the students in the ACE program. The faculty agreed that the ability to think critically was central to the adult educator's role and more likely to indicate probable success in the ACE program than would academic aptitude as operationalized by scores on the MAT or the *Graduate Record Examination* (GRE).

### **The Watson-Glaser Test**

The *Watson-Glaser Critical Thinking Appraisal* (WGCTA) was adopted as the admission test of choice not only for the ACE program, but also for the master's degree program in the Management and Development of Human Resources (MDHR), which is also delivered through a field-experience model. The WGCTA (Watson & Glaser, 1980) consists of 80 items in five sub-tests covering these critical thinking skills:

A. Inference: Each exercise begins with a statement that the examinee is to regard as true. This is followed by a series of inferences. The examinee decides whether the inferences are true, probably true, probably false, or false, or if there are insufficient data to form a judgment.

B. Recognition of Assumptions: Statements are followed by proposed assumptions. The examinee decides whether the assumptions are taken for granted in the statement or not.

C. Deduction: The examinee decides whether a series of conclusions do or do not necessarily follow from statements that are to be regarded by the examinee as true without exception.

D. Interpretation: The examinee weighs the evidence presented in short paragraphs and decides if the proposed generalizations are or are not warranted.

E. Evaluation of Arguments: A series of questions are followed by arguments; the examinee decides whether each argument is strong or weak.

The test items include problems, statements, arguments, interpretations, and data similar to those that are encountered on a daily basis at work, in the classroom, and in newspaper and magazine articles.

The WGCTA calls for responses to two different kinds of item content. Items having "neutral" content deal with the weather, scientific facts or experiments, and other subject matter about which people generally do not have strong feelings or prejudices. Items having "controversial" content, although approximately parallel in logical structure to neutral items, refer to political, economic, and social issues that frequently provoke very strong feelings. There is no known study guide or preparation book for the WGCTA.

### **The Validity Issue**

The MAT manual (1981) reports the results of two studies producing Pearson  $r$  coefficients between the MAT and WGCTA. The 86 graduate students in English in a Southern university and the 49 managers in a small manufacturing firm both yielded correlations of .55, which is significant at the .01 level for both samples. Thus about 30% of the variance in the MAT and WGCTA is shared, as shown by these studies.

The routine use of WGCTA as a predictor of academic outcomes at the collegiate level seems to be undocumented in the professional education literature. It is probably safe to say that NCE's use of the WGCTA as an admission test for an ACE master's degree program is unique. The need is clear that this practice should be systematically evaluated for predictive validity.

The two general research questions to be answered by this study are:

- (1) What is the effectiveness of the *Watson Glaser Critical Thinking Appraisal* (WGCTA) as a predictor of attrition, achievement level, thesis progress, and program completion time for a field-based master's degree program in Adult and Continuing Education (ACE)?
- (2) Do the WGCTA scale scores (Inferences, Recognition of Assumptions, Deduction, Interpretation, and Evaluation of Arguments) have diagnostic value in predicting the four outcome criteria?

## **Standard Operating Procedure**

A general information sheet about the WGCTA is included with the application materials given to each person who inquires about the ACE program. The WGCTA is group-administered by NCE personnel under controlled conditions with a 50-minute time limit. The total raw score and a percentile rank based on a college norm group are reported via letter to the student and to the Office of Admissions. The faculty of the applicant's degree program determines the score level required for admission.

The only routine exceptions to the requirement for submitting a WGCTA score are:

- (1) The applicant has already earned a masters' degree at an accredited institution, or
- (2) The applicant has submitted an official transcript of scores on another standardized test acceptable to the faculty of the specific program.

In practice, a very small portion (less than 10%) of the applicants for any given cluster is exempt from the WGCTA requirement.

## **Validation Procedure**

Data Collection. From the student admission folder are gathered demographic (sex, age, race, marital status, and home zip code), academic (undergraduate major, baccalaureate graduation year, the institution's Carnegie classification (1987) category, and GPA for junior and senior years combined), and admission test raw score (MAT or WGCTA) data, which serve as predictor variables.

From the academic records are gathered data for computing the ACEGPA, thesis progress, program completion status, and program completion time, which each serve as a criterion variable.

Data Analysis. The same statistical procedures are being used for two data sets: (1) those students who submitted MAT scores, and (2) those students who submitted WGCTA scores. Multiple regression analysis (for continuously scaled criterion variables) and multiple discriminant analysis (for discretely scaled criterion variables) are being used to assess the relative efficacy of MAT and WGCTA among the other predictor variables for forecasting each of the criterion variables.

## References

Carnegie Foundation's classifications of more than 3,300 institutions of higher education. (1987, July 8). *The Chronicle of Higher Education*, pp. 22-26, 28-30.

The Psychological Corporation. (1981). *Miller Analogies Test Manual*. New York: Author.

Watson, G., & Glaser, E. M. (1980). *Watson-Glaser Critical Thinking Appraisal Manual*. New York: The Psychological Corporation.