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AUTHOR Gentry, Janine M.; Perry, James S.  
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ABSTRACT

This study examines the relationship between test-wisness, memory, and grade-point average in college students. Test wisness is defined as a subject's capacity to utilize the characteristics and format of a test to receive a higher score, independent of the examinee's knowledge of the subject matter. Researchers hypothesized that test-wisness and memory skills are correlated with a student's grade-point average. Ninety-eight college students served as subjects (63 percent female). The participants completed a demographics sheet, the Test-Wisness Test (TWT), and three memory scales. Results indicated significant correlations between six of the variable combinations. The highest positive correlation occurred between test-wisness and grade-point average, suggesting that a person who uses resources wisely will make higher grades. Significant correlations also occurred between Meaningful Memory and grade-point average, as well as Memory Span and grade-point average. Associate or Rote Memory--the ability to recall material learned in a non-meaningful manner--was the only scale which did not correlate significantly with grade-point average. Results also indicated a relationship between short- and long-term memory and test-wisness. Contains 10 references. (RJM)

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**Test-Wiseness, Memory, and Academic Performance in  
University Students**

**Janine M. Gentry**

**and**

**James S. Perry**

**East Tennessee State University**

ED 375 351

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## ABSTRACT

The present research examines the relationship between test-wisness, memory, and grade-point average in college students. It was hypothesized that test-wisness and memory skills are correlated with a student's grade-point average. Three different memory scales were used along with the test-wisness exam. Ninety-eight male and female college students participated in the study. Students completed a packet of materials containing a demographic sheet, three memory scales, and a test-wisness exam. A Pearson Product-Moment Correlation Coefficient was performed including scores from each separate scale and grade-point averages of the subjects. Significant correlations were found between six of the variable combinations using a .05 level of significance. The highest correlation occurred between test-wisness and grade-point average, suggesting that a person who uses resources wisely will make higher grades.

## Test-Wisness, Memory, and Academic Performance in University Students

The present research raised the question whether or not test-wisness and memory are directly correlated with grade-point average in college students. "Test-wisness" was defined as a subject's capacity to utilize the characteristics and format of a test to receive a higher score (Millman, Bishop, & Ebel, 1965). Test-wisness is independent of the examinee's knowledge of the subject matter for which the items are supposedly measures. R. L. Thorndike conceived the concept of test-wisness, arguing that it is a learned and inherited characteristic (Green & Stewart, 1984). Thorndike saw test-wisness as a natural consequence of highly developed mental, cognitive, and reasoning ability. Green and Stewart (1984) concluded that test-wisness is not multifaceted, but instead an artifact of "one" cognitive ability. The research at hand attempted to identify a relationship between test-wisness and the multidimensional concept of memory.

Two-hundred and seventy-six college students, interviewed in a study by Gaier (1962), cited important reasons for success on examinations. "Test understanding", "comprehension and reasoning ability", and "test characteristics" were cited as top reasons for academic success.

Correlation studies have revealed that some learning styles have had consistently positive and moderate relationships with grade-point average (GPA) (Watkins & Battie, 1981; Ramsden & Entwistle, 1981). A study by Dolly and Vick (1986) investigated potential predictors of test-wisness in undergraduate students. Their results indicated that test-wisness could be predicted from things such as test-taking perceptions, and grade-point average.

Miller, Alway, and McKinley (1987) found that a methodical study style was directly related to higher GPA's. This study style is

characterized by reading what is assigned and employing rote memorization. Niaz (1987) looked at student success in introductory science courses at the college level as relating to formal operational reasoning and size of working memory. Conclusions indicated that size of working memory directly affected level of success.

These conclusions were tested with an attempt to understand the function of test-wisness and certain types of memory as they affect grade-point average in an academic setting. Three different memory scales were used along with a test-wisness exam. It was hypothesized that test-wisness and memory skills are directly correlated with grade-point average.

#### Methods

##### Subjects

Ninety-eight college students enrolled in junior and senior level psychology classes at East Tennessee State University served as subjects. The students voluntarily participated in the study. Both male and female students were assessed with 63% falling into the latter category.

##### Materials

Test-wisness was assessed with a scale developed by Weiten (1983). The Test-Wisness Test (TWT) was requested from its author and researchers were given permission to utilize it. The TWT consisted of 40 multiple-choice items intended to measure test-wisness in college student or adult populations. Scores ranged from zero to 40 depending on number of items answered correctly.

Three memory scales were used in the study. These were taken from the Comprehensive Ability Battery (CAB) manual (Hakstian, & Cattell, 1982). Associate or Rote Memory (Ma) was tested together with a Memory Span (Ms) scale and a Meaningful Memory (Mm) test. Associative memory,

the ability to recall material learned in a rote or non-meaningful manner, was assessed by the subjects total number of correct answers on a 14-item scale (Ma). The Memory Span test involved classic short-term memory assessed by total number of correct answers on a 20-item test. This test was administered using a pre-recorded cassette audio-tape included with the CAB manual (Hakstian & Cattell, 1982). A standard tape recorder was used to play this audio tape. Meaningful Memory, or the ability to remember material in which there are meaningful semantic linkages, was assessed by total score on a 10-item test.

A demographic sheet was also included inquiring about the subjects sex and grade-point average.

#### Procedure

Students were tested in a classroom setting as a group. After completing an informed consent form they were given a packet of materials. The packet included the demographic sheet, the three memory scales, and the test-wiseness exam. Instructions were read verbatim by the investigator to each group of students. After completing the demographic sheet, the memory scales were given in the following order; Ma, Ms, and Mm. The TWF was then administered and subjects finished at their own pace. Questionnaires were collected by the investigators.

Tests were scored and values were obtained for Associate (Rote) Memory (Ma), Memory Span (Ms), Meaningful Memory (Mm), Test-wiseness (TW), and grade-point average (GPA). The reported GPA's were checked with university records to assess accuracy. Relationships were determined using the Pearson Product-Moment Correlation Coefficient.

#### Results

After collection of data and scoring of tests, a Pearson Product-Moment Correlation Coefficient was performed including the scores from each separate scale and grade-point averages of the subjects.

Significant correlations were found between six of the variable combinations using a .05 level of significance as follows: Test-wiseness and Mm,  $r=.29$ ; test-wiseness and Ms,  $r=.28$ ; test-wiseness and GPA,  $r=.34$ ; Mm and Ms,  $r=.18$ ; Mm and GPA,  $r=.27$ ; Ms and GPA,  $r=.20$ . Table 1 displays coefficients and probability levels of significant variable pairs (See Table 1).

#### Discussion

A relationship is evident between a student's grade-point average and their test-wiseness ability, as well as between the different dimensions of memory and GPA. The highest positive correlation occurred between test-wiseness and grade-point average, suggesting that a person who uses resources wisely will make higher grades. A significant correlation also occurred between Meaningful Memory and grade-point average, as well as Memory Span and grade-point average. Associative or Rote Memory, or the ability to recall material learned in a non-meaningful manner, was the only scale which did not correlate significantly with grade-point average.

The research at hand correlates with results concluded by Dolly and Vick (1986) in their previously mentioned study. Their results indicated that test-wiseness could be predicted from things such as grade-point average and test-taking perceptions.

The present results contradict those found by Miller, Alway, and McKinley (1987) who found that a methodical study style characterized by Rote memorization directly related to higher GPA's. In the research at hand Rote memory was the only memory scale that did not significantly correlate with GPA. When placed in perspective this seems a logical result. In an academic setting one would obviously put to use test-wiseness, meaningful memory, and short-term memory span frequently, but the use of non-meaningful memory would be less frequent upon taking

tests and writing papers. The subjects studied may have developed the significant memory skills more intensely from frequent use.

A relationship is evident between a student's grade-point average and their test-wiseness ability, as well as between the different dimensions of memory, such as long and short-term memory and GPA. The additional findings indicate a relationship between short and long-term memory and test-wiseness. This gives meaning to Thorndike's original conceptualization of test-wiseness as a multidimensional ability.

## References

- Dolly, J.P. & Vick, D.S. (1986). An attempt to identify predictors of test-wiseness. Psychological Reports, 58(2), 663-672.
- Gaier, E.L. (1962). Students' perceptions of factors affecting test performance. Journal of Educational Research, 55, 561-566.
- Green, D.S. & Stewart, O. (1984). Test wiseness: The concept has no clothes. College Student Journal, 18(4), 416-424.
- Hakstian, A.R. & Cattell, R.B. (1982). Manual for the Comprehensive Ability Battery. Institute for Personality and Ability Testing, Inc., Champaign, Illinois.
- Miller, C.D., Alway, M., & McKinley, D.L. (1987). Effects of learning styles and strategies on academic success. Journal of College Student Personnel, 28(5), 399-404.
- Millman, J., Bishop, C.H., & Ebel, R. (1965). An analysis of test-wiseness. Educational and Psychological Measurement, 25, 707-726.
- Niaz, M. (1987). The role of cognitive factors in the teaching of science. Research in Science and Technological Education, 5(1), 7-16.
- Ramsden, P., & Entwistle, N.J. (1981). Effects of academic departments on students' approaches to studying. British Journal of Educational Psychology, 51, 368-383.
- Watkins, D., & Hattie, J. (1981). The learning processes of Australian university students: Investigations of contextual and personal factors. British Journal of Educational Psychology, 51, 384-393.
- Weiten, W. (1983). The TWT: A scale to measure test-wiseness on multiple-choice exams with adults. Unpublished manuscript, College of DuPage, Glen Ellyn, Illinois.

**Table 1**  
**Pearson Product-Moment Correlation Coefficients for Significant**  
**Variable Pairs**

| Variable<br>Pairs                 | Coefficient Values |                           |
|-----------------------------------|--------------------|---------------------------|
|                                   | r                  | Probability<br>Level of r |
| TW and M <sub>1</sub>             | .2941              | .002                      |
| TW and M <sub>2</sub>             | .2838              | .002                      |
| TW and GPA                        | .3439              | .000                      |
| M <sub>1</sub> and M <sub>2</sub> | .1881              | .033                      |
| M <sub>1</sub> and GPA            | .2681              | .004                      |
| M <sub>2</sub> and GPA            | .1977              | .026                      |