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ABSTRACT

While the prediction of college grade point average (GPA) has been extensively investigated, research results seem inconclusive. Recent developments in the realm of intelligence have emphasized word knowledge and world knowledge. These two components were investigated relative to college GPA in a group of elementary and secondary student teachers (N=137) and in a group of college freshmen (N=36). Subjects were administered the Nelson-Denny Reading Test to measure reading rate and reading comprehension, the Peabody Individual Achievement Test (PIAT) to measure general world knowledge, and the Peabody Picture Vocabulary Test Revised (PPVT-R) to measure word knowledge. Further information was gathered to provide values for the subjects' high school and college GPA's. Data analysis from both groups provided similar findings: high school GPA and the score from the PPVT-R were the best predictors of college GPA with high school GPA being the best single predictor. These findings suggest that past behavior is a good predictor of future behavior. Since the addition of scores from the PPVT-R provided an even better prediction model, word knowledge may be a significant factor in predicting college GPA. The fact that both the PPVT-R and the PIAT, tests designed for high school students, proved difficult for some subjects may raise other issues of concern to educators and researchers alike. (NRB)

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# Word/World Knowledge: The Prediction of College GPA

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Abstract

The prediction of college grade point average has been extensively investigated. The present study examines two salient domains relative to college GPA. Results are reported and implications indicated for education.

Word/World Knowledge: The Prediction of College GPA

Predicting college success is a major industry in this country. Literally millions of students have, or will have taken standardized tests in an attempt to enter college. Research regarding the prediction of college GPA seems inconclusive. An early study by Humphrey (1968) found much instability in college GPA over the 4 year time period. Mauger and Kolmodin (1975) examined the use of the Scholastic Aptitude Test and found a .52 correlation of the S. A T. - V score and terminal GPA. Goldman and Slaughter (1976) have indicated that the instability is due to different grading standards in different types of college classes. They suggest that the problem is a criterion problem rather than a predictive one. Their study demonstrated high validity for predicting grades in single classes. Aleamoni (1977) further examines the difficulties in this realm and indicated that prediction appears dependent upon exactly what college and universities want to predict, eg. first year success or four year success. In this regard, the behavioristic viewpoint has typically held that past behavior is the best predictor of future behavior thus, high school GPA appears to be a viable predictor of college GPA.

A recent development in the realm of intelligence has been Sternberg's idea of "Knowledge acquisition" (Sternberg, 1985). Essentially, Sternberg (1985) posits that a person's ability to acquire words and vocabulary is a highly accurate reflection of their intelligence. The emphasis on word knowledge is in accord with Clark and Clark's (1977) emphasis on dictionary (word

knowledge) and, perhaps more importantly, world knowledge (i.e. general information and indirectly long term memory); thus, these two components, word and world knowledge, were investigated relative to college GPA.

## Subjects

Elementary and secondary student teachers in a southwestern university served as one group of subjects. Freshmen enrolled in introductory psychology courses at the same univeristy served as a second group of subjects.

## Procedures

The two purposive samples were administered three standardized tests. They responded to the Nelson-Denny Reading Test (Nelson & Denny, 1973), Peabody Individual Achievement Test (P.I.A.T.)(Dunn & Marwardt, 1970), and Peabody Picture Vocabulary Test Revised (P.P.V.T.-R.)(Dunn & Dunn, 1981). The Nelson-Denny provides indices of reading rate and reading comprehension. The PIAT provided an indice of general world knowledge. The PPVT-R provided an indice of word knowledge. The PIAT included questions 60 to 85. The Peabody Picture Vocabulary Test - Revised was administered in a group format as the pictures were put on slides and projected onto a screen. Fifteen seconds exposure was allowed. The PPVT-R was begun at item 110 as per the directions for students aged 16-0 and above and ended at number 175. Further information was gathered to provide values for the subjects' high school and college GPA. These scores were analyzed using a multivariate stepwise procedure to determine of the five available predictors, which best predicts college GPA.

The potential predictors are reading rate, reading comprehension, world knowledge, word knowledge, and high school GPA.

## Results

The analysis of the data from both groups provided similar findings (see Tables 1 and 2). In both cases, high school GPA and the score from the PPVT-R are the best predictors of college GPA, $F(1, 134)=5.64$, $p<.05$ (for secondary and elementary student teachers), and $F(1, 33)=4.90$, $p<.05$ (for the sample from freshman students). These F values are obtained by a formula that subtracts the error value of the reduced model from the full model and divides that by the means square value of the full model. Significant results appear only when there is a significant drop in the error value as variables are added to the predicting model. High school GPA is the best single predictor for college GPA for these two samples of college students, $F(1, 135)=26.90$, $p<.05$ (for secondary and elementary student teachers), and $F(1, 34)=17.66$, $p<.05$ (for the sample from freshman students). A significant drop in variance was found with the addition of PPVT-R scores, but not for other variables as was discussed previously. There are however, several reservations relative to these results. Although the PPVT-R was begun at a point indicated for 16 year old students, many of the subjects did not obtain a basal. This same factor was also noted relative to the PIAT. In effect, these tests for high school students proved too difficult for some elementary and secondary high school student teachers. Freshmen students also had much difficulty in both of these realms. This factor may account for some of the difficulty

experienced by entering college freshmen. (i.e., a level of general knowledge and vocabulary is "taken for granted by college instructors.)

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Insert Tables 1 and 2 about here

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## DISCUSSION

After analyzing the data from these samples it seems that high school GPA is a good predictor of college G.P.A. This provides some evidence that past behavior is a good predictor of future behavior. The addition of scores from the PPVT-R provided an even better prediction model, thus word knowledge may be a significant factor in predicting college G.P.A. at the university where these samples were taken. Sternberg's (1985) emphasis on word knowledge, as reflective of knowledge acquisition, may thus reflect a valid emphasis.

Although not a main focus of the study, the lack of general information and word knowledge of the elementary and student teachers surprised the researchers. This study may reflect an issue of concern to educators. Further research is needed to ensure that other related measures provide similar results and to determine if the findings in this study are consistant with findings in other geographical areas.

Table 1

Summary Statistics and Error Values due to Addition of Predictor Variables.

Secondary and Elementary Student Teachers (N=137)

| Variables | Mean | Standard Deviation |
|---|---|---|
| Reading Rate | 236.1 | 74.0 |
| Reading Comprehension | 22.3 | 6.0 |
| P. I. A. T. | 8.4 | 3.2 |
| P. P. V. T. - R. | 40.2 | 10.7 |
| High School G. P. A. | 2.9 | 0.53 |
| College G. P. A. | 2.7 | 0.69 |

Predictor Variables in the Order of Most Accountable for Model Error Values

| Variable | Sums of Squares Error Value |
|---|---|
| High School G. P. A. | 54.31 |
| P. P. V. T. - R. | 52.11 |
| P. I. A. T. | 52.05 |
| Reading Rate | 52.02 |
| Reading Comprehension | 52.00 |

Table 2

Summary Statistics and Error Values due to Addition of Predictor Variables.

Freshman Students (N=36)

| Variable | Mean | Standard Deviation |
|---|---|---|
| Reading Rate | 256.8 | 54.8 |
| Reading Comprehension | 25.1 | 4.5 |
| P. I. A. T. | 10.9 | 3.4 |
| P. P. V. T. - R. | 40.9 | 8.5 |
| High School G. P. A. | 3.1 | 0.65 |
| College G. P. A. | 3.2 | 0.48 |

Predictor Variables in the Order of Most Accountable for Model Error Values

| Variable | Sums of Squares Error Value |
|---|---|
| High School G. P. A. | 5.38 |
| P. P. V. T. - R. | 4.69 |
| Reading Rate | 4.51 |
| P. I. A. T. | 4.39 |
| Reading Comprehension | 4.38 |

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