

## RELATIONSHIP BETWEEN MEANINGLESSNESS AND SCHOOL ACHIEVEMENT\*

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### SUMMARY

This study tested the relationship between meaninglessness and school achievement of eighth grade students. Meaninglessness (Seeman, American Sociological Review, 1959) scores were determined by a 10-item Likert scale constructed from student interviews. Factor analysis verified unidimensionality. School achievement (mean grade) was determined from three quarters of the school year in each of four subjects: English, mathematics, social science, and science. Ability (math and verbal) was measured by the Ohio Survey Test. Multiple linear regression used ability (verbal for social science and English; math for science and math), meaninglessness and a multiplicative term (ability x meaninglessness) as predictor variables and mean grade by subject as the criterion variables. Meaninglessness score predicted grades (except math) significantly ( $p = .05$ ) better than ability alone.

### INTRODUCTION

A common criticism of American education is that it is not perceived to be meaningful or relevant to students. Hickerson (1966 p. 69) makes the point that, "In American society children do not experience, nor can they sense that study of history, science, mathematics, or literature is necessary for them to become successful adults." He also suggests that the alienated student may achieve at a different level than does the student who is not alienated. The present study was undertaken to determine if there is a relationship between students' perceptions of the meaninglessness of school and their school achievement after correcting for differential achievement introduced by varying levels of ability. It was also expected that meaninglessness and ability would interact and, thus, an

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interactive model would increase prediction. (For example, a high ability student having a strong perception of meaninglessness may maintain above average but not high grades and a low ability person with a strong perception of meaninglessness probably would maintain very low grades, therefore, the interaction between ability and meaninglessness will be tested).

Meaninglessness is one of the five alternate definitions of alienation proposed by Melvin Seeman (1959, p. 786): It is, ". . . the individual's sense of (a lack of) understanding the events in which he is engaged." By substituting the word curriculum into Seeman's definition, it becomes essentially a reiteration of Hickerson's statement quoted above. Meaninglessness is then, ". . . the individual's sense of a lack of understanding of the curriculum in which he is engaged." School achievement is defined as the mean grade over three quarters of the school year in each curricular area (mathematics, social science, English, and science). Ability is defined by the scores on verbal and mathematics ability sections of the 1968 Ohio Survey Test.

The problem, then, is to establish whether a relationship exists between meaninglessness and school achievement when grades are corrected for ability and to test whether an interactive relationship predicts.

#### PROCEDURE

Meaninglessness was measured by a 10-item, five-point Likert response questionnaire. Items were constructed from tape recorded interviews with students randomly selected from the test population; eighth grade students in Centerville, Ohio. Items were selected according to the definition, revised, and selected again. The final instrument consisted of 10 items. Two sample items are included below:

- A. The things I am learning at school will help me after I graduate.
- F. At school I learn to deal with life's problems.

All items are scored according to the scale below so that a low score represents a low amount of meaning (high level of meaninglessness) and a high score represents a high amount of meaning (low level of meaninglessness).

1. Strongly disagree
2. Somewhat disagree
3. Neither agree nor disagree
4. Somewhat agree
5. Strongly agree

The instrument was then submitted to a pretest population of 181 eighth-grade students (all eighth-grade students at Tipp City, Ohio Junior High School) to determine unidimensionality. The resulting 176 complete questionnaires were used in a factor analysis. The first principal component accounted for 46.6% of the total variance; loadings ranged from .62 to .74. A second factor was slightly above the Kaiser criterion (1.00) and accounted for an additional 10.9% of the trace. The scale was, therefore, treated as if it were unidimensional as all items loaded highly and in the same direction on factor 1. An additive composite was used for scoring.

Complete data were collected on a total of 151 randomly selected eighth-grade students (approximately 35% of the total eighth-grade population) in the two middle schools of the Centerville, Ohio City School System. Information collected consists of school grades in each of four subject areas (mathematics, science, social science, and English) for three of the four quarters of the 1968-69 school year, the responses to a 10-item Likert scale designed to measure the student's perception of meaninglessness of school, and ability (verbal and mathematics) scores from the Ohio Survey Test administered in September 1968. Mathematics ability was not expected to add large amounts of prediction to English and social studies, so was not included in the predictive model for those subject areas. Verbal ability, likewise, was not included for science and mathematics. The four subject areas might be thought of as four replications of the test for relationships between meaninglessness and school achievement.

The analysis was conducted by multiple regression using the general models:

$$(1) Y = a_0U + a_1X^1 + a_2X^2 + a_3X^3$$

$$(2) Y = a_0U + a_1X^1 + a_2X^2$$

$$(3) Y = a_0U + a_1X^1$$

Where:

$Y$  = Criterion measure = school grades (math, science, social studies, English).

$U$  = unit vector

$X^1$  = predictor = ability score vector (verbal for English and social studies; math for science and math).

$X^2$  = predictor = vector of scores on meaningfulness scale.

$X^3$  = predictor = vector of scores on meaningfulness X ability (interactive term).

$a_0, a_1, a_2, a_3$  = least squares estimated weights assigned to each score.

The first series of F-tests between models (one F-test for each subject area) will indicate whether or not the relationship exists between meaningfulness and school achievement by testing Model 1 (including ability, meaningfulness, and interaction to predict grades) with Model 3 (ability alone to predict meaningfulness). The second series of F-tests will test whether the contribution of the interactive term to prediction is significant by testing the difference between Model 1 (including meaningfulness, ability, and interaction) and Model 2 (including meaningfulness and ability) in predicting course grades. Significance of an F-test indicates that for a particular subject area the relationship exists as represented by the larger model.



TABLE 3  
 $R^2$  VALUES, DIFFERENCES, AND F-TESTS OF MODELS 1 AND 3  
 TEST OF MEANINGLESSNESS AND INTERACTION

Criterion (GPA)	$R^2$ Full Model 1	Reduced $R^2$ Model 3	Difference in $R^2$	F-Ratio (df = 2, 147)
Social Science	.3806	.3550	.0250	3.037*
Mathematics	.3543	.3418	.0125	1.423
English	.3015	.2702	.0313	3.296*
Science	.4401	.4022	.0379	4.980*

\*  $p = .05$ .

Table 3 represents the values of  $R^2$  obtained when Model 3 (uses ability only to predict grade point) for each subject area displayed together with the values of  $R^2$  obtained for Model 1 (includes ability, interaction, and meaningfulness scores to predict grade point), differences between  $R^2$  values for Models 1 and 3, and the obtained F-ratios. This table represents the test between the prediction of grade point from ability only and from ability and meaningfulness (including interaction) together as predictors. F-ratios for social science, English, and science are significant ( $p = .05$ ).

These data show that for three subject areas a relationship between meaningfulness and school achievement is detectable. Further research should be undertaken to verify its existence in other situations.

TABLE 4  
 $R^2$  Values and F-Tests of Models 1 and 2  
 (Interaction)

Predicted (GPA) Subject	$R^2$ Full Model 1	Reduced $R^2$ Model 2	Difference in $R^2$	F-Ratio (df = 2, 147)
Social Science	.3806	.3786	.0019	.460
Mathematics	.3543	.3488	.0055	1.253
English	.3015	.2909	.0106	2.223
Science	.4401	.4342	.0059	1.553

Table 4 represents the values of  $R^2$  obtained when Model 1 (includes ability, meaningfulness, and interaction to predict grade point) and Model 2 (includes ability and meaningfulness to predict grade point) were calculated for each subject area. The differences between values of  $R^2$  for Models 1 and 2 are also shown as are the obtained F-ratios. This table represents the test of the interaction between ability and meaningfulness. None of the F-ratios are significant. Thus, the interaction between ability and meaningfulness apparently is not useful for prediction in any of the four cases.

The failure of meaningfulness to attain significance in the prediction of mathematics grades may be due to several possibilities. One of these is that the assignment of grades in mathematics was done wholly on the basis of ability. This is not usually the case in a public school setting. A second possibility is that the instrument did not assess any portion of the meaning or lack of meaning of mathematics for students. A third possibility may be that mathematics ability as measured by the Ohio Survey Test is related to or measures the meaning found in math by the student. Thus, the effect of the meaningfulness score already may have been included. Verbal ability scores used for predicting English grades might have been expected to produce similar results, yet, they did not. It may be that English grades are not wholly based on verbal ability because grammar and other dimensions often enter into grade assignments.

The nonsignificance of interaction between ability and meaningfulness in all subject areas might be explained by the fact that neither ability nor attitude, but rather performance is often the major criterion for grading. Although attitude and ability are generally indicators of what may be operating to produce grades, influences related to school atmosphere (for example, motivation, personality, peer group influences) may often be dominant factors. It is reasonable to expect that in this school setting, performance rather than attitude would be the criterion for assigning grades. It was an "innovative, open" school in which behavior was not expected to be a part of grades. (Grade reports include a separate rating for attitude.) However, the fact remains that the interaction was not a significant predictor and, thus, that meaningfulness is not differentially active for different levels of ability in predicting grades.

Although the interaction of ability and meaningfulness did not attain significance, the major premise of this study is supported in three or four cases (in all subject areas except mathematics). Meaninglessness, as perceived by the students in a school, is apparently related to school grades. Certainly these results point the way for continued research in several areas. First, the instrument might be improved by rewriting, lengthening, and modifying it to refer to specific subject areas. Second, it may be that measuring meaningfulness repeatedly would provide a more reliable index of meaningfulness for a particular individual and, thus, provide a more stable base from which to predict. If one may view each of the subject areas as a replication of the same study, the interaction seems not to be a particularly fruitful area of study, however, with an improved instrument, it should be retested. If the students achieve because they see meaning in school or if they do not achieve because they see school as meaningless to them, there still remains the question of the origins of such perceptions. Perhaps by understanding causes of perceptions of meaningfulness or meaningfulness, schools may improve instruction, achievement, motivation, and student satisfaction.

The positive results noted above--significance of the relationship between meaningfulness and school grades in three or four subject areas--suggest that meaningfulness is probably related to school achievement. Suggested improvements in the measurement of meaningfulness and further verification of the relationship may be necessary before attacking the major problem; understanding student perceptions of meaningfulness and what effects such perceptions may have on student achievement. The ultimate goal is to modify the school environment in order to increase achievement, motivation, and satisfaction of students. These data, for the sample included in this study, suggest that an inverse relationship does exist between meaningfulness and school grades.

#### SUMMARY

This study was undertaken to determine if a relationship exists between the social-psychological construct--meaninglessness--and achievement as measured by school grades. It was suggested that ability could influence the prediction of grades, therefore, specific ability measures were used as covariates in the analysis.

The interaction between ability and meaningfulness was also considered important. The first series of F-tests (one test for each of four subjects; mathematics, English, social science, science) indicated in three cases that meaningfulness (interactive and direct score taken together) added significantly to prediction above the level provided by ability alone. A second series of F-tests indicated that the interaction between ability and meaningfulness did not add significantly to prediction above the model including both ability and meaningfulness. It was concluded that for these data an inverse relationship does exist between meaningfulness and school achievement.

#### REFERENCES

- Hickerson, N. Education for alienation. Englewood Cliffs, N. J.: Prentice-Hall, 1966.
- Seeman, M. On the meaning of alienation. American Sociological Review, 1959, 24, 783-791.