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ABSTRACT

This report contains the results of two studies on the correlation of locus of control and nine measures of scholastic achievement for matched samples of students in two diverse educational environments. In the first study involving fifth grade children, the hypothesized significant positive relationship between internality and achievement was found in the more "open" setting. The expectation that locus of control was not correlated to achievement in a "traditional" setting was also supported. Similar results were found in the second study involving community college students who were enrolled in either "alternative" or "traditional" sections of three different introductory courses. The results were explained as supporting the use of the Aptitude X treatment paradigm in studying the relationship between psychological dimensions such as locus of control and performance variables such as achievement. (Author/RC)

Locus of Control and Academic Achievement in Traditional and Non-Traditional Educational Settings

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Locus of Control and Academic Achievement in Traditional and Non-Traditional Educational Settings

After more than a decade of research related to the locus of control construct (Rotter, 1954, 1966), the number of studies using this variable has reached staggering proportions. (For reviews see Joe, 1971; Lefcourt, 1974; Throop & MacDonald, 1971). While all of this research has been generated from essentially the same theoretical assumptions, and has used basically the same measuring devices, it would be far from correct to say that all of this research has coalesced into a coherent picture. Indeed, the various behaviors which have been related to locus of control do not produce a consistent pattern among themselves, nor is the research within any of the separate areas always consistent. In the more recent summarizations of locus of control research (Lefcourt, 1974; Rotter, 1975) a general point seems to be that several questions have been posed incorrectly in this research which precludes any real integration of the data. In the present article, one of the behaviors which has been related to locus of control--academic achievement--will be reviewed in this light. An attempt will be made to ascertain under what conditions locus of control should predict achievement and where it should not. Two studies will then be presented which will attempt to verify this analysis.

The initial rationale for predicting that locus of control should be related to academic achievement is, as Lefcourt points out (Lefcourt, 1974), directly derivable from common sense. An internal person, believing

that actions and outcomes are correlated, will be likely to expend the necessary effort to achieve a goal if he perceives that the goal is attainable. He will persist in the face of failure, he will actively seek and use information, he will organize his time and delay gratification, and, in general, will perform those behaviors which will lead him to his objectives. For the external individual who believes that actions and outcomes are uncorrelated and that rewards are controlled by fate or chance or powerful others, none of the activity mentioned above makes any sense. Since achievement is ultimately determined by external forces, effort toward achievement goals is of little value. Theoretically then, if ability is held constant, an internal person will have higher achievement levels than will an external person. As operationalized in several studies, the above theoretical statement has been taken to predict a correlation between some measure of locus of control and some indication of academic achievement such as grades or standardized achievement tests, with the effect of intelligence partialed out.

In reviewing the empirical support for the predicted relationship between locus of control and academic achievement, it is evident that the pattern of results is far from conclusive. A majority of this research has been done with elementary school children, and most of this research has used the Crandall Intellectual Achievement Responsibility Questionnaire (IAR) as the measure of locus of control (Crandall, Katkovsky & Crandall, 1965). The IAR is designed to assess the perception of control within the

academic setting, and makes a distinction between the acceptance of responsibility for positive events (I+) and negative events (I-). In general, the research using this scale has been somewhat supportive of the idea that internality is related to achievement. There are disturbing inconsistencies, however, between the reported studies. The IAR is sometimes a better predictor of achievement among males than females, while at other times it predicts achievement equally well for both sexes (McGhee & Crandall, 1968). There are also unexplained differences in prediction as a function of grade level (Crandall, Katkovsky & Preston, 1962). Inevitably, there are also cases where the IAR does not predict achievement at all (Lintner & DuCette, 1974).

In moving to high school and college populations, the picture is even more perplexing and less supportive of the predicted relationship. In studies by Eisenman & Platt (1968), Hjelle (1970), and DuCette & Wolk (1972) no relationship was found between locus of control and achievement. On the other hand, Nowicki & Roundtree (1971) did find a relationship, with internality positively related to grades for men but not for women. Conversely, Masari & Rosenblum (1972) found internality related to achievement for women but not for men. In reviewing these studies it is noteworthy that the measuring device for locus of control was most often the Rotter Internal-External Control Scale (I-E), although other tests were also used.

The above studies can hardly be seen as presenting convincing evidence for the relationship of internality and achievement. Approximately

half of the published studies show no relationship between internality and achievement. These studies probably represent only a small proportion of unsuccessful attempts which have been made to find such a relationship. The issue is further clouded by the studies which report sex differences and age-related differences. In attempting to understand these inconsistencies it might be instructive to analyze the original set of assumptions regarding locus of control and its relationship to achievement. It would seem that for these assumptions to hold, two conditions must be met:

1. The academic situation must provide the potential for a true contingent relationship to exist between effort and outcome. If achievement is, in fact, largely determined by external forces (e.g., the teacher) then no belief to the contrary will produce differences in achievement as a function of differences in effort.

2. Academic achievement must be viewed as a desireable outcome, and must be valued over other possible altneratives. If other potential rewards are more highly desired (e.g., popularity), then internality should predict such outcomes far better than academic achievement.

It is evident in much of the research on academic correlates of locus of control that too little attention is paid to the academic setting in which the research is performed, and what the demands and rewards are in these settings. The question in most of these studies has been: "Does locus of control predict achievement?" The question might better have been: "Does locus of control predict achievement

in this setting, with this teacher, and with these pupils?" As such, the question is posed in Aptitude X Treatment interaction terms. This type of research, as Cronbach (1975) points out, is a far more meaningful way of posing educational questions. It would seem to be a better way of posing locus of control questions also.

In keeping with this Aptitude X Treatment rationale, and assuming that locus of control is the aptitude of interest, a meaningful treatment variable would seem to be the type of educational setting. One educational setting which has attracted considerable attention in both the professional and popular literature is the open or alternative classroom (Kohl, 1972; Nyquist & Hawes, 1972; Rathbone, 1971). While there is no single unified statement of principles which is accepted by all practitioners of this model there are several common themes which have been identified by Herbert Walberg (1971). These themes indicate that teachers in open classrooms tend to make the natural interest and curiosity of their students an important determinate of the curriculum. Teachers in such schools are thought to be less authoritarian and to adopt a more humane approach in their interpersonal behaviors than their more traditional counterparts. Students in open schools are thought to be less competitive with each other than are the students in the traditional classroom. This is believed to be the product of a more subjective and personalized system of student evaluation which is practiced by open school teachers. Thus, in comparison to the more traditional setting, open classrooms tend to be places where instruction is highly flexible

and focused on the interests of the students, and where competition is de-emphasized while students are encouraged to take a more active part in their own evaluation.

In reviewing these criteria of the open classroom it would seem that such an educational setting would be ideal for locus of control to predict achievement. Conversely in a more traditional educational setting where the teacher is the focus of the learning environment (i.e., where the teacher sets the standards and determines the rewards) locus of control might not predict achievement since the correlation between effort and outcome could be weak or even non-existent.

In the two studies presented in this paper, the above prediction of a differential correlation between locus of control and academic achievement will be tested in an elementary school and in a college setting. To make these studies parallel to previous research, the same tests of locus of control will be used (the IAR and the I-E scales), and standard measures of achievement will be surveyed (grades and standardized achievement tests). It is hypothesized that in the traditional, teacher-centered classroom there will be little if any correlation between locus of control and achievement. On the other hand, in those classrooms where the student actively determines his own program and evaluates his own performance, a positive correlation will exist between internality scores and achievement.

Study 1

Subjects

A sample of 50 fifth grade students was selected from both a

traditionally oriented elementary school and from an open elementary school (total N=100) located in the same suburban school district. Assignment of students to these two schools was done on a purely geographic basis without any self selection. Subjects representing the two schools were matched with respect to ability, family size, sex, and socio-economic status.

Educational Environment

The two schools from which the subjects were drawn were both less than ten years old and were located within two miles of each other. Differences in the learning environment of the two schools was quantified by two methods. The first of the environmental measures was the Dimensions of Schooling Questionnaire, DISC IV, (Traub, Weiss, Fisher, & Musella, 1972). This questionnaire, which was administered to the teachers of both schools, is specifically designed to elicit information about several aspects of school life hypothesized to be important in the implementation of open programs. The mean scores for the teachers of the two schools were found to be significantly different, and the differences were found to be in the hypothesized direction.

The Amidon-Flanders Interaction Analysis technique was the second method used to quantify differences between the teachers of the two schools (Amidon & Flanders, 1971). A chi square analysis of the distribution of observations recorded in the two schools was found to show significant differences between the teachers of the two schools. An interpretation

of the direction of these differences indicated that the open school teachers tended to interact with their students in ways which were less directive and threatening than did the traditional school's teachers. Thus, it can be concluded that the two schools were significantly different in terms of openness.

Instruments

Locus of control was measured by the Intellectual Achievement Responsibilities (IAR) Scale as developed by Crandall, Katkovsky, & Crandall (1965). To meet the requirements of the local school administration the scale was modified slightly by the removal of references to parents. Of the original 34 items of the IAR 30 items were retained which referred to peers and teachers.

As mentioned previously, there are two subscales to this instrument (I^- and I+). The ability of a child to attribute responsibility for failure to himself is defined as I^-; and, the child's ability to attribute responsibilities for success to himself is defined as I+.

Achievement was measured using the Stanford Achievement Test, Intermediate Battery II, Form W (Kelley, Madden, Gardner, & Rudman, 1964). The nine subscales of this test which were used in the analysis are: Word Meaning; Paragraph Meaning; Spelling; Language; Arithmetic Computation; Arithmetic Concepts; Arithmetic Applications; Social Studies; and Science.

Results

Correlations among each of the nine achievement variables and the three scores of the IAR (I+, I^-, I total) for each of the two samples

are presented in Table 1.

Insert Table 1 about here

It is evident from these correlations that locus of control was able to predict achievement only in the open setting. Since there has been some discussion in the literature concerning the differential predictability of males and females using the IAR, separate correlation matrices were calculated for both sexes. No discernable sex differences were discovered. In addition, no clear difference in prediction using the I+ or I- subscales of the IAR is evident. Essentially, Table 1 presents a consistent pattern of prediction from the IAR for students in the open setting, and a consistent lack of prediction for students in the traditional setting.

Study 2

Subjects

The 177 subjects in this study were second semester freshmen and sophomores attending a community college. The elimination of first semester freshmen from the sample was necessary to insure some stability in the cumulative grade point average. The students in this college represent the usual mix of full-time and continuing education types which characterizes a typical suburban community college.

Educational Environment

As part of an attempt to modify and up-date the curriculum in the college, a series of courses are designated each semester as having "alternative"

sections. In every case there is a parallel section which is taught in the more usual manner. This practice of having parallel sections is considered experimental in that the intent is to see how the students respond to different educational techniques. In effect, there is no precise definition of how the alternative sections are to differ from the traditional except that the teachers of the alternative sections must agree to follow an "open format." Operationally, this is usually taken to mean that the teacher will use contract grading and will allow the class to decide on projects and methods of evaluation. In contrast to Study 1, however, the differences between the alternative and traditional sections are not precise, and the results must be viewed in this light. It should be also noted that the students are aware of which sections are alternative and self-select themselves into these sections.

Instruments

The subjects in this study completed the Rotter I-E Scale and an adult version of the Crandall IAR early in the semester. The Crandall scale was modified to make the items appropriate for college students (Masari & Rosenblum, 1972). Course grades, semester grades and cumulative grade point average were taken from the students' academic records.

Results

Since the equivalence of the alternative and traditional sections is questionable due to self-selection of the students, some comparison data are presented in Table 2.

Insert Table 2 about here

These data indicate that the student population in the two types of sections do not differ on any of the personality measures. There is a slight tendency for the alternative sections to have higher grades for those specific sections although the difference is not significant.

Presented in Table 3 are the correlations among the three measures of achievement and the I-E and IAR scales. The table presents the correlations for all students combined, and also the correlations of the various measures of locus of control and course grades for each section in the alternative and traditional courses.

Insert Table 3 about here

The results from this study can be seen to be in basic agreement with Study 1. The IAR is again able to predict achievement more strongly in the alternative setting. It is evident, however, that most of this predictability comes from the psychology course. In addition, the I-E scale is not able to predict achievement in either setting.

Discussion

The results from both studies support the hypothesis that locus of control is able to predict achievement in only certain types of educational settings. In Study 1, where the educational environments clearly differed on the dimension of openness, internality was positively related to achievement in the open setting but this was not true in the traditional setting. The results from Study 2 support the same general conclusion.

In this second study it is evident that in the alternative psychology section internality again correlated with achievement. This was not true in either of the other alternative sections. Moreover, in these sections there were positive correlations between these variables for the traditional psychology section. Such results however do not necessarily contradict the basic argument of this study. It is our contention that internal students will achieve better if, and only if, the environment allows a contingent relationship to exist between effort and reward. Since there was no real check on how much teacher control existed in any of the sections, it is difficult to determine to what extent alternative and traditional classes differed on the dimension of environmental control. It is very possible that both types of psychology classes presented this type of contingent environment. From these data it is possible to infer that the alternative psychology classes provided somewhat more environmental control for students than did the traditionally oriented sections. Whatever is the case in these classrooms it is evident that the IAR is not able to predict achievement in every environment, and that the use of this scale must take this fact into account.

These data also present a rather convincing case for the use of a specific rather than a generalized expectancy scale. The I-E scale was not able to predict achievement in any of the various sections nor for any of the various measures of achievement in Study 1. On the other hand, the IAR in both Study 1 and 2 was able to predict achievement

as operationalized in a variety of ways. This issue of generalized versus specific expectancies has been under discussion in the locus of control literature and these data support the view that at least for some behavior a specific expectancy scale is preferable.

Of major interest to the present authors is the issue of differential predictability as a function of environmental setting. This point would seem to have general applicability across the variety of behaviors which have been related to locus of control. There has been a tendency in the locus of control literature to pose research questions as if an internal orientation (or an external one) is sufficient to account for certain behaviors. From this orientation a research question might be: "Does an internal use information more efficiently than an external?" From the position presented in this paper, such a question is not meaningful. There may be behaviors for which a person's locus of control creates a necessary condition for the prediction of behavior. Such an orientation however is never sufficient in itself, especially if that behavior is viewed in isolation from the environmental situation in which the behavior is performed. This is hardly a new idea, but it seems that the point must be reemphasized occasionally to remind researchers in the locus of control area that some of the questions they are posing can never have an answer.

There is, of course, an even more general point than the one just discussed. This paper has focused on locus of control as a predictor of achievement in various educational settings, and has pointed out that the

use of this variable must take into account situational demands. The same point is true for any personality variable that might be used to predict specific behaviors such as achievement. Indeed, to say that the situation, the person, and the interaction between the two must be considered before a meaningful prediction is possible in such studies should be merely to repeat the obvious. Apparently, this idea is easy to forget.

Table 1

Correlations Among Achievement and Locus of Control Scores for the Two School Samples

Achievement Variable	School	I+	I-	I-Total
Word Meaning	Open	.22	.12	.22
	Traditional	-.04	-.04	-.07
Paragraph Meaning	Open	.24*	.20	.28**
	Traditional	-.01	-.14	-.12
Spelling	Open	.25	.16	.26*
	Traditional	.11	-.03	.03
Language	Open	.40***	.12	.32***
	Traditional	-.13	-.12	-.19
Arithmetic Computation	Open	.13	.42***	.36***
	Traditional	.10	-.23*	-.12
Arithmetic Concepts	Open	.31**	.16	.29**
	Traditional	.07	-.22	-.13
Arithmetic Applications	Open	.32**	.26*	.36***
	Traditional	-.01	-.12	-.11
Social Studies	Open	.25*	.11	.23*
	Traditional	-.02	-.20	-.18
Science	Open	.25*	.07	.20
	Traditional	.02	-.04	-.03

Note: N for both samples = 50

* $p < .1$

** $p < .05$

*** $p < .01$

Table 2

Means and Standard Deviations of the Personality Variables and Achievement Variables for Alternative and Traditional Sections

Variable	Alternative (N = 84)	Traditional (N = 93)
Locus of Control	$\bar{X}$ = 10.85	$\bar{X}$ = 11.12
	sd = 4.10	sd= 4.16
I+	$\bar{X}$ = 13.56	$\bar{X}$ = 13.12
	sd= 2.95	sd= 3.14
I-	$\bar{X}$ = 13.04	$\bar{X}$ = 13.98
	sd= 3.16	sd= 3.51
I-Total	$\bar{X}$ = 26.51	$\bar{X}$ = 27.13
	sd= 4.66	sd= 4.73
Cum GPA	$\bar{X}$ = 2.83	$\bar{X}$ = 2.85
	sd= .85	sd= 1.03
Semester GPA	$\bar{X}$ = 2.76	$\bar{X}$ = 2.80
	sd= .73	sd= .98
Course Grade	$\bar{X}$ = 2.90	$\bar{X}$ = 2.58
	sd= 1.14	sd= .79

Table 3

Correlations Among Achievement Variables and Locus of Control Scores for Alternative and Traditional Sections

Achievement Variables	Section	I-E	I+	I-	I-Total
All Students Combined					
Cumulative GPA	Alternative	-.05	.14	.15	.15
	Traditional	-.10	.06	.13	.10
Semester GPA	Alternative	-.13	.21*	.18	.20*
	Traditional	-.04	.18	.18	.16
Course Grade	Alternative	-.10	.38***	.41***	.40***
	Traditional	-.19	.20*	.17	.18
By Sections					
Course Grade	Econ.-Alternative	-.09	.26	.29	.27
	Econ.-Traditional	-.16	.13	.16	.18
	Psych.-Alternative	-.09	.46***	.49***	.48***
	Psych.-Traditional	-.14	.31**	.30*	.30*
	Biology-Alternative	-.10	.08	.17	.16
	Biology-Traditional	-.24	.13	.17	.15

Note: N for Alternative = 84; N for Traditional = 84
N for Alternative-Economic = 24; Traditional Economic = 27
Alternative-Psychology = 40; Traditional Psychology = 43
Alternative-Biology = 20; Traditional-Biology = 23

* $p < .1$

** $p < .05$

*** $p < .01$

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ABSTRACT

The correlation of locus of control and nine measures of scholastic achievement were examined for matched samples of fifth grade children who were enrolled in schools representing one of two diverse educational environments. The bypothesized significant positive relationship between internality and achievement was found in the more "open" setting. The expectation that locus of control was not correlated to achievement in a "traditional" setting was also supported. Similar results were also found for a sample of community college students who were enrolled in either "alternative" or "traditional" sections of three different introductory courses. The results were explained as supporting the use of Apptitude X treatment paridigm in studying the relationship between psychological dimensions such as locus of control and performance variables such as achievement.