

THE RELATION OF FAILURE IN COLLEGE SCHOLARSHIP TO INTELLIGENCE AND TO THE NUMBER OF HOURS OF WORK CARRIED.

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In this study an attempt was made to determine the relationship between unsatisfactory academic work in college and the intelligence of the student as measured by intelligence tests, and also between unsatisfactory academic work and the number of hours of work carried. The specific questions with which the study dealt were as follows:

1. To what extent does the probability of academic failure differ for students of different levels of intelligence?
2. To what extent does this probability of failure differ for students who are carrying different amounts of work? Do students of a given degree of intelligence tend to fail in more hours or in a larger proportion of hours as they increase the number of hours of work carried, and, if so, is such a statement true for certain levels of intelligence, but not for others?

The cases included in the study consisted of students registered at Ohio State University during a period of two years. The number of students upon whom the study was based averaged more than 5,300 for each of four semesters. The Ohio State University Psychological Test was the intelligence test used, and on the basis of the scores made on this test, each student was given a percentile intelligence rating. In addition, each student was designated as belonging to one of the five intelligence classes which were defined as follows:

Class I included percentile ratings 96-100

Class II included percentile ratings 76-95

Class III included percentile ratings 26-75

Class IV included percentile ratings 6-25

Class V included percentile ratings 1- 5

As stated above the study was based upon an average of over 5,300 students for each of four semesters, or a total of 21,202 cases. A given student may have been registered either one, two, three, or four of the semesters included in the study. If, for ex-

ample, he was registered in each of the four semesters, he alone accounted for four of the 21,202 cases. The distribution of these students according to college class, intelligence class, and number of hours of work carried per semester is given in Table I.

The first step was to determine for each semester who of these students had become delinquent. The term 'delinquent' is used throughout the study to mean students who were failed, or were conditioned in one or more courses. In Table II is shown the percent of students delinquent when distributed according to college class, intelligence class, and number of hours of work carried. From this table it may be noted that for the whole group of students almost exactly one-third (33.5 percent) were

TABLE I.

DISTRIBUTION OF THE STUDENTS ACCORDING TO COLLEGE CLASS, INTELLIGENCE CLASS AND NUMBER OF HOURS OF WORK CARRIED.

College Class	Number of Hours of Work Carried	Number of Students in Intelligence Class					
		I	II	III	IV	V	Total
Freshmen.....	1-14.....	15	76	299	149	47	586
	15-18.....	164	773	2428	928	210	4503
	19 plus.....	136	465	1026	286	57	1970
	Total.....	315	1314	3753	1363	314	7059
Sophomore.....	1-14.....	25	134	445	155	51	810
	15-18.....	159	803	2214	793	180	4149
	19 plus.....	85	277	607	184	30	1183
	Total.....	269	1214	3266	1132	261	6142
Junior.....	1-14.....	26	91	239	83	34	473
	15-18.....	164	714	1665	566	115	3224
	19 plus.....	46	205	420	95	15	781
	Total.....	236	1010	2324	744	164	4478
Senior.....	1-14.....	25	121	219	63	15	443
	15-18.....	127	474	881	299	43	1824
	19 plus.....	56	167	283	72	18	596
	Total.....	208	762	1383	434	76	2863
Special.....	1-14.....	15	59	120	63	35	292
	15-18.....	20	28	165	72	33	318
	19 plus.....	1	8	32	4	5	50
	Total.....	36	95	317	139	73	660
Total.....	1-14.....	106	481	1322	513	182	2604
	15-18.....	634	2792	7353	2658	581	14018
	19 plus.....	324	1123	2368	641	125	4580
	Total.....	1064	4395	11043	3812	888	21202

delinquent each semester. As another illustration of the type of information given by this table it is seen that of all freshmen included in the study, 42.3 percent on the average were delinquent each semester; of those freshmen of Class V intelligence (the lowest class), 64 percent on the average were delinquent each

TABLE II.
PERCENTAGE OF STUDENTS DELINQUENT WHEN DISTRIBUTED ACCORDING TO
COLLEGE CLASS, INTELLIGENCE CLASS AND NUMBER OF
HOURS OF WORK CARRIED.

College Class	Number of Hours of Work Carried	Per Cent Delinquent in Intelligence Class					
		I	II	III	IV	V	Total
Freshmen.....	1-14.....	13.3	31.6	46.5	54.5	59.6	46.8
	15-18.....	17.7	29.8	40.6	55.0	62.9	41.9
	19 plus.....	21.3	27.7	44.3	59.1	71.9	41.8
	Total.....	19.0	29.1	42.1	55.8	64.0	42.3
Sophomore.....	1-14.....	32.0	30.6	49.0	45.2	47.1	44.6
	15-18.....	24.5	29.8	38.9	48.8	56.1	39.2
	19 plus.....	21.2	26.7	32.8	41.3	30.0	31.8
	Total.....	24.2	29.2	39.2	47.1	51.3	38.5
Junior.....	1-14.....	19.2	27.5	25.9	38.6	38.2	29.0
	15-18.....	15.9	24.4	25.8	37.5	42.6	27.6
	19 plus.....	13.0	19.0	25.5	35.8	26.7	24.3
	Total.....	15.7	23.6	25.7	37.4	40.2	27.2
Senior.....	1-14.....	0.0	7.4	7.8	14.3	0.0	7.9
	15-18.....	4.7	6.5	11.0	13.4	32.6	10.3
	19 plus.....	10.7	9.6	9.5	18.1	11.1	10.6
	Total.....	5.8	7.3	10.2	14.3	21.1	10.0
Special.....	1-14.....	13.3	13.6	29.2	42.9	54.3	30.8
	15-18.....	10.0	17.9	47.3	54.2	66.7	45.9
	19 plus.....	0.0	0.0	43.8	50.0	60.0	38.0
	Total.....	11.1	13.7	40.1	48.9	60.3	38.6
Total.....	1-14.....	16.0	22.2	35.6	42.7	45.6	34.4
	15-18.....	16.1	24.3	33.3	44.7	54.7	33.8
	19 plus.....	18.2	23.0	33.9	45.9	47.2	32.1
	Total.....	16.6	23.8	33.7	44.6	51.8	33.5

semester; of those freshmen of Class V intelligence carrying nineteen or more hours of work, 71.9 percent on the average were delinquent each semester. This table shows that of all students of Class I intelligence 16.6 percent on the average were delinquent each semester; of students of Class II intelligence, 23.8 percent; of those of Class III intelligence, 33.7 percent; of those of Class IV intelligence, 44.6 percent; and of those of

Class V intelligence, 51.8 percent. That is, the probability of a student of Class V intelligence becoming delinquent in scholarship was over three times the probability that a student of Class I intelligence would become delinquent.

In making this study, a great deal of interest had been centered in the question as to how accurately the intelligence test rating distinguished those students who were delinquent in scholarship from those who were not conditioned or failed in any of their work. One writer in discussing this question has declared that "the time is not far distant, if not already at hand, when we can predict with almost mathematical precision by means of properly administered intelligence tests those who are doomed in advance to failure." In view of such a hopeful prediction, it may be somewhat disappointing to state that the results of the present study clearly indicate that the time referred to has not yet arrived. It is quite evident that academic delinquency is not confined to any one level of intelligence. This is what might be expected in view of the fact that academic success or failure is the resultant of many factors of which intelligence is but one, although an important one.

In the use of the term 'delinquency' an important consideration has thus far been disregarded. It will be recalled that a delinquent student has been defined as one who was either conditioned or failed in some of his work, no account being taken of the amount of work in which he was conditioned or failed. An examination of the data with respect to the number of hours in which delinquent students of the five intelligence classes were conditioned and failed on the average each semester revealed a rather unexpected fact. Delinquent students of high intelligence were delinquent in practically the same amount of work as delinquent students of low intelligence, delinquent students of Class I intelligence being conditioned or failed on the average in 4.85 hours, and such students of Class V intelligence in 5.61 hours each semester.

A comparison of the probability of the students of the various college classes, as freshman, sophomore, junior, and senior, becoming delinquent also revealed significant results. The usual statement is that the freshman year is the difficult year of adjustment and that, if this year is survived successfully, things look fairly promising for the college student. The results of the study indicated also rather conclusively that in the sophomore year the probability that a student will become delinquent is

practically as great as it is during the freshman year, 42.3 percent of all freshmen being delinquent each semester, and 38.5 percent of all sophomores. In the junior year this probability drops considerably, there being 27.2 percent of juniors delinquent each semester. Of the seniors, there were delinquent but 10 percent, which is less than one-fourth the proportion of freshmen. These data show that the distinction between lower classmen and upper classmen is not without some foundation in fact. The freshmen and sophomores are very similar in their probability of academic failure, and they form a group which is quite different in this respect from the juniors and seniors.

An important fact emerged from the division of the students into those carrying light, average, and heavy schedules of work. The probability that a student carrying fourteen hours or less of work would become delinquent was as great as it was in the case of a student carrying nineteen or more hours of work. Table II shows that of those students who carried a light schedule (14 hours or less), 34.4 percent became delinquent; of those carrying an average schedule (15 to 18 hours), 33.8 percent; and of those with a heavy schedule (19 hours or more), 32.1 percent. Not only was this true with respect to the group as a whole, it was equally true when the students of each intelligence class were considered separately. Just as they stand, these data suggest that within the limits of twelve to twenty-one hours a student may carry either a light or a heavy schedule without changing his chances of becoming delinquent in any of his work. Before accepting such a conclusion, however, the following factor must be examined. Whenever a student by his actual record in the university proved himself to be such a poor scholar that he was placed on probation, the amount of work which he might schedule was reduced. Students whose records were poor, but still not bad enough to cause them to be placed on probation, were likewise advised to take light schedules. In other words, due to certain restrictions, students who were known to be weak in scholarship were as a rule carrying light schedules. In order to eliminate the influence of this factor, the following method was used. A tabulation of all data was made in the case of the freshman students only for the first semesters of the two years included in the study. There were available for this purpose 3,673 cases. Obviously, the restrictions mentioned did not apply to these freshman students during their first semester's work. The results obtained are presented in Table III.

TABLE III.

PERCENT OF FRESHMAN STUDENTS WHO WERE DELINQUENT IN SCHOLARSHIP DURING THEIR FIRST SEMESTER'S WORK.

Number of Hours of Work Carried	Per Cent Delinquent in Intelligence Class					Total
	I	II	III	IV	V	
14 and less....	20.0 *	26.8	44.3	56.9	52.2	44.9
15 to 18.....	14.8	33.1	43.9	63.4	67.0	46.4
19 and over....	21.9	30.9	47.2	67.7	78.3	46.5
Total	18.2	31.8	45.0	64.0	68.0	46.3

When the results for this group of freshmen as a whole are examined, it is found that they do not throw much light on the question under consideration. It still appears as though students who carried a light schedule were as likely to become delinquent as those with a heavy schedule. If, however, the results for each intelligence class are noted separately, an interesting and significant fact becomes apparent. While it still remains true that in the case of students of intelligence Classes I, II, and III, those carrying a heavy schedule had as many chances of carrying it without incurring any conditions and failures as did those with a light schedule, in the case of students of Classes IV and V intelligence the situation changed. Among those students there was a decided tendency for those attempting a heavy schedule to become delinquent in a greater proportion of cases than for those students carrying a light schedule. These facts require a modification of the first conclusion suggested, and it may now be stated as follows: Within the limits of twelve to twenty-one hours, the probability that a student carrying a light schedule will become delinquent in some of this work was practically as great as the probability that a student carrying a heavy schedule would become delinquent, except in the case of students in the lowest quartile of intelligence. Among such students an increase in the number of hours of work carried resulted in an increase in the probability that they would become delinquent.

The satisfactory explanation of this conclusion presents an interesting question. It seems plausible to assume that an increase in the amount of work carried will result in an increase in the probability that in some of the work the student will be conditioned or failed. It is quite likely that if the schedule of hours were increased indefinitely beyond the limit of twenty-one or twenty-two hours, the probability of delinquency would in-

crease for all levels of intelligence. Within the limits set, however, and for students of average and superior intelligence the probability of delinquency appears to be conditioned more by other factors than by the amount of work carried. What several of these other factors are may be suggested, and some objective evidence offered in support of one of them. In the first place, many students have certain ideas and ideals with respect to scholarship which do not react favorably upon scholarship. While serving as secretary of the College of Education of Ohio State University the writer frequently came into contact with students of average and superior intelligence who frankly stated that they were interested in scholarship only to the extent of meeting minimum requirements, of "getting by." The standard of scholarship remains constant for such individuals regardless of the amount of work they are carrying. They strive for no higher quality of scholarship in their work when carrying twelve hours than when scheduled for twenty hours, and as a result they do not achieve a higher quality. On the other hand, their degree of intelligence is high enough to permit them within these limits of hours to attain equally well their standard, the minimum requirements, even though the amount of work is increased. In the second place, students of high intelligence frequently study fewer hours than students of low intelligence. Consequently, when a student of average or superior intelligence increases the number of hours of work carried, he still has a reserve of spare time from which to draw for the meagre preparation of the extra work. The student of low intelligence, on the other hand, is already using his available time nearer to its absolute limit and the addition of more hours of work finds him with a smaller reserve of extra time upon which to draw. This assumption of less study on the part of students of superior intelligence has some objective evidence to support it. In one study¹, in which an attempt was made to secure an objective measure of time spent in study, a correlation of $-.29$ was reported between time spent in study and intelligence, indicating that there is a tendency for those who are most intelligent to study least. Although little objective evidence has been presented on this point, it seems reasonable to suggest that the ideals of many students with respect to scholarship and the consequent lack of attention to study are two of the factors which to a greater or less degree are responsible for the situation revealed in the present study.

¹ Wilson, W. R. "Mental Tests and College Teaching" School and Society, 15:629-635. June 10, 1922.