



STUDENT ATTITUDES IN
RELATION TO CLASSROOM ACHIEVEMENT

Thesis for the Degree of M. A.
MICHIGAN STATE COLLEGE
Jerrold Bruce Armour
1954

This is to certify that the
thesis entitled
"Student Attitudes in Relation
to Classroom Achievement"
presented by
Jerrold B. Armour
has been accepted towards fulfillment
of the requirements for
Master of Arts degree in Psychology

Jam *PS*

Date May 20, 1954

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By

Jerrold Bruce Armour

AN ABSTRACT

Submitted to the School of Graduate Studies of Michigan
State College of Agriculture and Applied Science
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Psychology

Year 1954

Approved


 

The purpose of this study was to test several hypotheses to the effect that there is no relationship between students' expressed satisfactions with eight areas of their college and classroom life and: (1) students' achievement; (2) students' gain in a course.

The subjects were 100 students in two beginning Psychology classes, 36 in a business Psychology class, and approximately 350 students in eight classes of beginning Psychology. All of the classes were taught by the lecture-discussion method.

The first two groups of subjects were given the "Student Opinion Questionnaire" purported to measure satisfaction in eight areas considered important and relevant to college students. From the first group (N = 100), measures of course gain as well as course achievement were obtained. Only measures of achievement were obtained from the second group (N = 36). Achievement and gain scores were based on results from taking objective-type tests during the term.

The third group (N = 350) was given a short questionnaire containing three scales found in the "Student Opinion Questionnaire". Achievement in this group was based on the score on a standard final test.

Correlations were run between students' satisfaction scores and achievement scores, and between students' satisfaction scores and gain scores in the two beginning Psychology classes. Two multiple prediction equations were calculated; one for the prediction of course achievement scores from students' satisfaction scores, and the other to predict course gain scores from students' satisfaction scores.

The relationships found between students' satisfaction scores and achievement in beginning Psychology were cross validated with the students in the business Psychology course. The results of the cross validation supported all the null hypotheses made pertaining to relationships between student satisfaction and course achievement. It was not possible to predict classroom achievement in business Psychology using the regression equation developed for this purpose, from a knowledge of students' satisfaction scores as measured (supposedly) by the "Student Opinion Questionnaire".

Relationships were found between students' course gain and students' satisfaction with the role of a student, satisfaction with the college, and satisfaction with the work. They should be considered tentative until they are cross validated.

For the eight beginning Psychology classes, rank order correlations were obtained between mean class satisfaction scores in the three areas measured and mean class achievement scores. Mean class level of satisfaction with the teacher was apparently related to mean class achievement. It was the only one of the three areas of satisfaction examined in this way found related to achievement. This finding should also be regarded as tentative until the stability of the relationship is tested.

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ACKNOWLEDGEMENTS

The author wishes to express his sincere thanks to Dr. James S. Karslake and Dr. Henry C. Smith, under whose patient supervision this investigation was undertaken and to whom the thesis is herewith dedicated.

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STATEMENT OF PROBLEM

This study arose from an interest in job satisfaction and productivity. Workers' job satisfaction has long been measured on the assumption that the more satisfied workers were the more productive workers. It was accepted that workers' job satisfaction and productivity were related. In this study the principal problem was to find: (1) whether there were significant relationships between measures of students' satisfaction with their college and classroom life and measures of students' achievement, and (2) whether there were significant relationships between measures of students' satisfaction and measures of their gains in classroom achievement. A secondary problem was one of exploring differences, if any, between the satisfactions of one class and that of another as related to the level of class achievement.

HYPOTHESES

Many investigations in the past have attempted the study of relationships between satisfaction and achievement. Students' satisfactions in eight areas of classroom and college life were investigated by use of the writer's "Student Opinion Questionnaire". Because of inconsistencies in other studies, it was hypothesized that there were null relationships between students' satisfactions in the eight areas, and both (1) course achievement; and (2) gain in a course, as indicated by achievement test scores.

The major hypothesis is: Students' satisfaction with their college and classroom life is not related to either achievement or gain in the classroom.

Secondary hypotheses are: Neither achievement nor gain for students is related to:

- 1) The student's satisfaction with the role of a student;
- 2) The student's satisfaction with the college;
- 3) The student's satisfaction with the teacher;
- 4) The student's satisfaction with his class associates;
- 5) The student's satisfaction with the work;
- 6) The student's self satisfaction;
- 7) The student's satisfaction with the class;
- 8) The student's satisfaction with his mark and the grading system;

in so far as any of these are measured by the "Student Opinion Questionnaire".

BACKGROUND

Satisfaction is considered a general attitude that results from many specific attitudes (3). Newcomb (14) defined an attitude as " . . . a more or less persistent set to respond in a given way to an object or situation. The concept of attitude relates the individual to any aspect of his environment which has positive or negative value for him." When so conceived, a person's attitudes can be measured.

Previously, studies have dealt with problems closely related to those considered in this study. Linton (12) would conceive of the role of a student as including the sum total of the cultural patterns associated with student status and those occupying the status. It should encompass the attitudes, values, expectations, and behavior associated with being a student by society in general. How readily the student accepts the role and assumes its responsibilities indicates his satisfaction with it. In considering the occupational or educational ladder, the college student's position will generally be found at higher levels of status. To generalize from Super's findings (22), it is expected that students, as a group, will be satisfied with what they are doing, and show little variation in their degree of satisfaction. Neidt and Merrill (13) indicated a lack of relationship between satisfaction with the student's role and achievement when they found little correlation between students' attitude toward education and course achievement.

Student evaluations of teachers were significantly correlated with teacher evaluations made by fellow teachers and supervisors (2), (23). However, students did not evaluate instructors in terms of the grades they received (5), (15), (19).

Johnson and Smith (10) found no relationship between measures of student democratic gains and achievement gains in classroom situations designed to foster student interaction. Feidler, Hartman, and Rudin (6) found less effectiveness among basketball teams conferring status on the more likable players than among teams which conferred status on the game oriented players. Attitudes toward associates tend to be independent of achievement, even when considered in different situations.

Satisfaction with the work may be likened to interest in it. Strong (21) has pointed out that satisfactions with an activity may only be indicators of interest, and have no reference to ability or proficiency. Over short periods of time, he contends, there is probably no correlation of interest with achievement. Berdie (1) found only a low correlation between a measure of curriculum satisfaction and the honor point ratio of engineering students. Freyer (7) found low and contradictory correlations between interests and course grades used as criteria of ability, and concluded that there was no relationship between them.

Self satisfaction, an indicator of personal adjustment is the attitude a person holds toward himself. Harris (9) found no correlations of consequence between college grades and scores on measures of inferiority and extraversion for college students. Cronbach (4) found that the relationship between grade average and Group Rorschach adjustment rating was very unstable for students beyond the first year of college.

Class satisfaction indicates the students' perception of the class meetings as being satisfying, stimulating, and enjoyable. Johnson and Smith (10) found an insignificant correlation between the way students evaluated the class for these qualities and the students' achievement in

the class. Smith (17) found no difference between students' class evaluations in two types of classes. He also found inconsistent relationships between measures of class satisfaction and students' classroom achievement. Similar results were also found by Smith and Dunbar (18).

Knowledge of the mark being received in the course had no motivating effect on students' achievement, according to Ross (16). Smith (17) found no significant relationships between students' attitudes toward an incentive system of grading and course achievement among student groups being graded by different methods. Ghiselli and Brown (8) observe that no consistent relationships have been found in industry between production or output levels and workers' expressed satisfactions with the wage payment system.

From these studies it is readily seen that no clear-cut relationships have been found between measures of satisfaction and measures of achievement. In the present study the writer attempted to consolidate and clarify the diverse findings by investigating the different relationships in single groups of subjects.

PROCEDURE

Relationships (if any) between various aspects of student satisfaction and both: (1) achievement, and (2) gain in achievement were explored in this study using the devices and procedures described in this section.

The Questionnaire

The different aspects of student satisfaction were measured by using a 120 item "Student Opinion Questionnaire". It was composed of eight satisfaction scales; one to test each hypothesis. Seven of the scales had 16 items; one had eight. The items in each scale were semi-randomly arranged throughout the questionnaire so that they were separated, yet easy to score. Item arrangement is shown in Figure 1, Appendix B.

Half the statements in each scale were positive; half were negative. There were five possible responses to each item. Responses were entered on separate answer sheets, and the response to each item was scored from one to five; high numbers indicating favorable attitudes (11). (Questionnaire is found in Appendix B.)

Tests of Achievement

The achievement tests used in the validation study with two beginning Psychology classes were of the objective, multiple-choice type. The initial and final tests used in the beginning Psychology sections were equivalent forms of the same test. Each test was ninety items long; composed of three sections, thirty items each. The sections measured vocabulary, facts, and the application of psychological principles. Examples of each type of item follow:

Vocabulary

Set (1) preparation (2) reaction (3) pathway (4) choice (5) fixation.

Factual

Raising body temperature by electric current is a specific treatment for (1) psychosomatic illness (2) psychoneurosis (3) brain syphilis (4) manic-depressive psychosis (5) paranoid schizophrenia.

Application of Psychological Principles

Under which of these conditions will the sex drive of rats be stronger?

(1) Give animal plenty of food and water. (2) Place animal in obstruction box when young. (3) Deprive animal of food, water, and sex for two days. (4) Deprive animal of food and water for one day. (5) Keep male and female together constantly.

The reliabilities of these tests were reported as .43 for the initial administration and .71 at the end of the course (10). Three quizzes given during the term and the final examination determined the students' achievement in the course. Achievement was considered the total score obtained by a student on the three quizzes and the final test.

Students' achievement in the business Psychology class, the cross validation sample, was measured by three objective, multiple-choice tests. The first was 103 items, the second was sixty items, and the final was fifty items. The tests were given during the third and sixth weeks and at the end of the term. No reliability data was available for these tests, however the distribution of achievement scores was approximately normal.

Measure of Gain

A measure of gain was found for the students in the beginning Psychology classes. One form of the equivalent 90 item tests was administered at the beginning of the term; the other at the end of the term as the final test. The score on the final minus the score on the initial test was considered a measure of students' gain.

Validation Study

The subjects of the validation study were 100 students, 52 male and 48 female, in two beginning psychology classes taught by the same instructor. The classes met four hours a week and were conducted in an informal lecture-discussion manner. One quarter of the meetings were devoted to class projects. The students were mostly sophomores, with some juniors and seniors. The first week of the term, Fall, 1953, the students took the initial test. During the term they took the three quizzes. The "Student Opinion Questionnaire" to which the students signed their names, was administered during the ninth week. The final test was given at the term end. Students' achievement and gain scores were calculated and the satisfaction questionnaires were scored.

Correlations were found between students' achievement scores and satisfaction scores and between gain scores and satisfaction scores. The intercorrelations of the eight satisfaction scales were also calculated. Two multiple correlation coefficients and two multiple regression equations were calculated. One was to predict achievement scores from satisfaction scores and the other was to predict gain scores from satisfaction scores.

Cross Validation Study of Achievement

The relationships between students' satisfaction and course achievement were tested for stability the following term, Winter, 1954. The subjects consisted of 36 students, 29 male and 7 female, enrolled in a business Psychology class taught by a different instructor. The students ranged in class standing from sophomores to seniors. The class met three one-hour periods a week and was conducted on an informal lecture-discussion basis. Two tests were taken by the students during the term. They were given the "Student Opinion Questionnaire" during the ninth week. Names were signed to the questionnaire. The final test was given at the term's end. Satisfaction scores were found for each student on the eight scales and on the questionnaire as a whole. From a knowledge of satisfaction scores, achievement scores for the 36 students were predicted using the multiple regression equation developed for this purpose in the previous study of 100 students in a beginning Psychology course. Intercorrelations of possible interest were computed.

Group Study of Achievement

Because of an interest in the possibility of some relationship between group satisfaction and group achievement, three satisfaction scales were taken from the original questionnaire and administered to eight beginning Psychology classes taught by five different instructors. All instructors used the lecture-discussion method. There were approximately 350 subjects. About the ninth week of the term, group satisfaction with the teacher, the class, and the work were sampled. Names were omitted from the questionnaires. The average scores of the eight classes on each satisfaction scale were calculated and ranked. Achievement was measured by

a 90 item final test taken by all of the students at the end of the term. Average class achievement was found from the test results. The average achievement scores were ranked and correlated with the average achievement scores obtained from the three scales.

It should be noted that there was no cross validation of either ✓ relationships between students' satisfaction and course gains or relationships between group satisfaction and group achievement.

FINDINGS

Validation Study

The results of the first study are shown in Table 1. The set of relationships between students' satisfaction scores and achievement scores is of primary interest. From the table it can be seen that the null hypothesis regarding students' general satisfaction was accepted as tenable. The correlation between total satisfaction score and achievement score was not significantly different from zero. Five of the other eight hypotheses pertaining to satisfactions and achievement were accepted as tenable; the correlations in question being zero. Tentatively rejected were hypotheses of no relationship between achievement and satisfaction with the college, satisfaction with associates, and self satisfaction. Correlations were found for these three relationships significant at the five percent level of confidence or better.

A multiple regression equation was derived to predict achievement scores from a knowledge of satisfaction scores. The Wherry-Doolittle method (20) was used. Four scales were selected by this method as the best predictors of achievement. The scales picked were measures of satisfaction with associates, self satisfaction, satisfaction with the college, and satisfaction with the mark and grading. The beta weights were:

$$\begin{aligned} B_4 &= -.321 \\ B_6 &= .317 \\ B_2 &= .183 \\ B_8 &= .157. \end{aligned}$$

The multiple R for predicting achievement score with a knowledge of satisfaction scores was: $R_a = .495$ and $R_a^2 = .2475$. R was significantly different

from zero beyond the one percent level of confidence. The prediction equation in standard score form was:

$$x_a = -.321x_4 + .317x_6 - .183x_2 + .157x_8.$$

TABLE 1

STUDENT SATISFACTION SCORES CORRELATED WITH EACH OTHER, WITH ACHIEVEMENT SCORES, AND WITH GAIN SCORES IN TWO BEGINNING PSYCHOLOGY CLASSES (N=100)
(Decimal points omitted)

Scale	2	3	4	5	6	7	8	9	10	Total
1. Role	18	05	15	29*	34*	18	-07	08	41*	43*
2. College	--	-06	37*	-11	15	13	10	-23'	37*	30
3. Teacher		--	-08	25'	23'	72*	17	08	-01	63*
4. Associates			--	18	15	17	-07	-33*	01	41*
5. Work				--	14	70*	07	08	30*	65*
6. Self					--	08	-03	24'	03	42*
7. Class						--	14	05	11	79*
8. Mark and Grading							--	15	-03	18
9. Achievement								--	--	06
10. Gain									--	02
Total Scale										--

- * significantly different from zero at the 1% level.
- ' significantly different from zero at the 5% level.
- " greater than spurious correlation.

The correlations between satisfaction scores and gain scores found in Table 1, show that the null hypotheses were for the most part tenable. No significant correlations were found between total (general) satisfaction score and gain score or between scores on five of the eight specific satisfaction scales and gain. Significant correlations were found between gain score and satisfaction with the role of a student, satisfaction with the college, and satisfaction with the work. The null hypotheses were tentatively rejected beyond the one percent level of confidence in those three instances.

Of interest is the multiple regression equation derived for predicting gain score from a knowledge of satisfaction scores. The Wherry-Doolittle method was again used, and four satisfaction scales were selected as the best predictors of gain. The scales were: satisfaction with the role of a student, satisfaction with the college, satisfaction with the work, and satisfaction with the class. The beta weights were:

$$\begin{aligned} B_1 &= .245 \\ B_2 &= .431 \\ B_5 &= .528 \\ B_7 &= .360. \end{aligned}$$

The multiple R for predicting gain score, knowing satisfaction scores was:

$$R_g = .667 \text{ and } R_g^2 = .444. \text{ The regression equation in standard score form was: } x_g = .245x_1 + .431x_2 + .528x_5 + .360x_7.$$

Cross Validation Study of Achievement

The real test of stability for the relationships found, involved using the regression equation to predict achievement. The four satisfaction scale scores previously selected as predictors of achievement were substituted into the regression equation, and achievement scores were predicted for students in the cross validation sample. Students' predicted achievement scores were correlated with their actual achievement scores in the course. The resulting correlation was nearly zero ($r_{pa} = -.0896$) for 36 cases. Comparing this with the original R of .497, showed that achievement scores were not predicted from satisfaction scores. In as much as the relationships between students' satisfaction scores and course achievement scores failed to hold up on cross validation, all null hypotheses with reference to satisfaction and achievement must be accepted as tenable. ✓

In Table 2 are the intercorrelations between satisfaction and achievement for the 36 students in the cross validation group.

TABLE 2
STUDENT SATISFACTION SCORES CORRELATED WITH EACH OTHER AND WITH ACHIEVEMENT SCORES IN A BUSINESS PSYCHOLOGY CLASS (N = 36)
(Decimal points omitted)

Scale	2	3	4	5	6	7	8	9
1. Role	53*	18	-08	50*	28	32	15	00
2. College	--	14	11	03	-01	12	-13	07
3. Teacher		--	24	04	10	82*	48*	-25
4. Associates			--	32	27	41'	32	-26
5. Work				--	32	31	00	18
6. Self					--	19	04	17
7. Class						--	34'	-37'
8. Mark and Grading							--	-14
9. Achievement								--

* significantly different from zero at the 1% level.

' significantly different from zero at the 5% level.

Group Study of Achievement

Table 3 shows the results found in the study of group satisfaction and group achievement. Average class scores on three satisfaction scales, of interest to the writer, were correlated with average class scores on a standard final test. The relationships found in eight beginning Psychology classes (N, approximately 350 students) were studied.

The classes were taught by five instructors; A,B,C,D, and E. Instructors A, B, and C each taught two sections. Mean class scores of achievement and satisfaction are found in Table 6, Appendix A. Of the three measures of class satisfaction, only average satisfaction with the teacher was significantly related to average class achievement. It was interesting

to note that group level of satisfaction with the teacher was related to group achievement, whereas individual student's satisfaction with the teacher was not found significantly related to the student's course achievement. The relationship between class satisfaction with the teacher and average class achievement can only be tentatively accepted as its stability was not re-examined by means of a cross validation study.

TABLE 3

AVERAGE CLASS SATISFACTION SCORES CORRELATED WITH EACH OTHER
AND WITH AVERAGE CLASS ACHIEVEMENT IN EIGHT BEGINNING PSYCH-
OLOGY CLASSES**

Scale	1	2	3	4
1. Teacher	--	.80*	-.05	.73'
2. Class		--	.34	.17
3. Work			--	-.30
4. Achievement				--

** rank order correlations were used.

* significantly different from zero at the 1% level.

' significantly different from zero at the 5% level.

The significant findings of the studies may be summarized:

1. The relationships between students' satisfaction with areas of their college life and students' course achievement found in the validation study were not found in the cross validation study.
2. Students' achievement scores in a business Psychology class could not be predicted from their satisfaction scores when substituted into a prediction equation derived from the relationships between students' satisfaction scores and students' achievement scores in beginning Psychology.
3. The various aspects of students' satisfaction, as measured in this study were not related to students' classroom achievement.

4. It was tentatively found that students' satisfaction with the role of a student, satisfaction with the college, and satisfaction with the work were related to a measure of students' gain in a course.

5. It was tentatively found that average class satisfaction with the teacher was significantly related to average class achievement.

CONCLUSIONS

To the extent that the "Student Opinion Questionnaire" measured students' satisfaction and the achievement tests measured students' class achievement, the results of this study indicated that students' satisfaction with their college and classroom life was not consistently or significantly related to course achievement. Satisfaction scores could not be used to predict students' classroom achievement scores. A pattern was found in which three areas of student satisfaction were significantly related to course gain. The level of satisfaction with the teacher shown by the class was found relative to the average achievement of the class. The last two relationships must be considered tentative for lack of cross validation.

DISCUSSION

In general, the hypotheses of null relationship between students' satisfaction with areas of their college and classroom life and students' course achievement were accepted as tenable. Eight areas of student satisfaction were studied, and none of them, as measured by the "Student Opinion Questionnaire" was found consistently related to measures of students' course achievement. This was illustrated by the fact it was not possible to predict students' achievement in one course using a multiple regression equation derived from relationships found between achievement and satisfaction scores of students in another course.

It is possible that factors other than the relationships studied affected the results. The questionnaire used to measure students' satisfaction must be considered. It was constructed by the writer specifically for use in this study. To the extent that it measured what it was designed to measure, the questionnaire was valid. However, it is not known whether the questionnaire actually measured students' satisfaction in the eight areas it purported to measure. The questionnaire's reliability is also in doubt. Internal consistency estimates of the questionnaire's eight scales ranged from .58 to .88 (See Table 4, Appendix A). These merely estimated the homogeneity of items in each scale as the students responded to them. Reliability in terms of accuracy of measurement or consistency was not estimated.

The measures of achievement used should also be considered for their effect upon the results. Internal consistency estimates of reliability were available for one set of achievement tests used. However, no

reliability estimates were available for the other set of achievement tests; those used in the business Psychology class. Therefore, it can hardly be said that the accuracy of measuring achievement was known. The achievement tests supposedly measured students' knowledge in either beginning or business Psychology. There was no external criterion against which the tests could be validated. They had to be accepted on their face validity as measures of classroom achievement in the course. Operational validity of the tests is a matter of speculation.

In light of the measuring instruments that were available, the relationships between measures of students' satisfaction and students' classroom achievement were not stable. It may be conceived, assuming valid measures, that relationship patterns of the type studied are transient; relative to the situation in which they are observed. Students have different backgrounds, training, and expectations. These differences should be reflected in students' satisfactions; what satisfies them and to what degree. It may be that satisfaction is basically personal in nature, and as a result is not related in any consistent way to classroom achievement; which was measured in a rather impersonal manner.

The relationship found between average class satisfaction with the teacher and average class achievement could be interpreted to illustrate the above point. Both class satisfaction with the teacher and class achievement, as measured, were gross and impersonal in nature. Possibly satisfaction with the teacher may affect the class's achievement as a unit, because the class tends to center around the teacher. But the individual student can be conceived of as being on his own, having personal focal points of satisfaction which may or may not affect his classroom achievement. Such speculation is, of course, only tentative because the relationship was not cross validated by subsequent study.

The relationships that were found between course gain scores and students' satisfaction with the role of a student, satisfaction with the college, and satisfaction with the work are also tentative, for lack of cross validation. However, the relationships, if true, formed a neat pattern that could have positive implications for predicting students' improvement in course work. It appeared that students who expressed satisfaction with the work they were doing, where they were doing it, and the idea that they were in a position to do that kind of work, tended to show high gain in the pursuit of the work, although not necessarily high achievement.

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APPENDIX

A. Tables

B. Questionnaires

Appendix A

TABLE 4

SPLIT-HALF RELIABILITIES OF THE "STUDENT OPINION QUESTIONNAIRE" SATISFACTION SCALES CORRECTED BY THE SPEARMAN-BROWN FORMULA

Scale	r_{hh}	r_t
1.	.41	.58
2.	.71	.83
3.	.79	.88
4.	.76	.86
5.	.76	.86
6.	.47	.64
7.	.72	.83
8.	.55	.71
Total	.93	.96

TABLE 5

MEAN SCORES AND STANDARD DEVIATIONS OF TWO STUDENT GROUPS ON THE SCALES OF THE "STUDENT OPINION QUESTIONNAIRE"

Satisfaction Scale	Group I (N=100)		Group II (N=36)	
	M_n	S.D.	M_n	S.D.
1. Role	59.32	7.21	61.42	6.06
2. College	59.76	10.56	56.36	9.52
3. Teacher	49.05	14.46	62.86	13.03
4. Associates	60.84	10.22	58.64	8.17
5. Work	60.64	11.39	66.33	7.48
6. Self	53.30	8.96	57.58	8.89
7. Class	53.05	11.54	57.36	10.58
8. Mark and Grading	25.83	4.69	24.03	5.29
Total	419.58	46.90	444.58	44.73

TABLE 6

MEAN SCORES, RANK, AND STANDARD DEVIATIONS OF EIGHT BEGINNING PSYCHOLOGY
CLASSES ON THREE MEASURES OF SATISFACTION AND AN ACHIEVEMENT TEST

Class of	Teacher Satisfaction			Class satisfaction			Work Satisfaction			Achievement				
	N	Mn	Rank	S.D.	N	Mn	Rank	S.D.	N	Mn	Rank	S.D.		
A ₁ *	40	67.70	4	7.83	60.78	2	9.95	62.18	4	9.94	48	55.50	7	10.43
A ₂	39	64.74	5	13.25	59.18	5	12.77	62.05	5	12.61	46	56.09	6	10.84
B ₁	46	69.13	2	9.60	63.52	1	10.33	62.00	6	8.92	49	60.92	2	10.82
B ₂	42	68.19	3	10.47	59.59	4	12.58	63.57	3	9.06	50	56.22	5	11.23
C ₁	49	59.02	6.5	13.80	51.80	8	13.92	56.33	8	13.21	51	60.73	3	10.19
C ₂	43	59.02	6.5	10.79	55.46	7	9.70	61.42	7	9.24	51	59.37	4	9.17
D	37	69.94	1	11.52	60.76	3	10.59	64.11	2	8.64	72	66.43	1	9.63
E	43	54.02	8	14.52	58.37	6	10.43	64.84	1	8.40	47	52.57	8	14.83

* Subscripts denote two sections taught by same instructor.

Appendix B

FIGURE I

**ITEM NUMBERS AND KIND OF ITEM IN EACH OF THE EIGHT SATISFACTION SCALES
FOUND IN THE "STUDENT OPINION QUESTIONNAIRE"**

Attitude Scale; Name and Number	Number of Items	Positive Items; Numbers	Negative Items; Numbers
1. Role of Student	16	1,2,31,32, 61,62,91,92	3,4,33,34, 63, 64,93,94
2. College	16	5,6,35,36, 65,66,95,96	7,8,37,38, 67,68,97,98
3. Teacher	16	9,10,39,40, 69,70,99,100	11,12,41,42, 71,72,101,102
4. Associates	16	13,14,43,44 73,74,103,104	15,16,45,46, 75,76,105,106
5. Work	16	17,18,47,48, 77,78,107,108	19,20,49,50, 79,80,109,110
6. Self	16	21,22,51,52, 81,82,111,112	23,24,53,54, 83, 84,113,114
7. Class	16	25,26,55,56, 85,86,115,116	27,28,57,58, 87,88,117,118
8. Mark and Grading	8	29,59,89,119	30,60,90,120

FIGURE II

ITEM NUMBERS AND KIND OF ITEM IN EACH OF THE THREE SCALES USED IN THE
GROUP STUDY OF SATISFACTION AND ACHIEVEMENT

Attitude Scale Name	Number of Items	Positive Items; Numbers	Negative Items; Numbers
Teacher	16	1,7,15,21, 24,30,36,46	4,10,13,18, 26,33,40,43
Class	16	2,11,14,19, 25,34,38,47	5,8,16,22, 28,31,42,44
Work	16	3,9,17,27, 29,37,41,45	6,12,20,23, 32,35,39,48

DIRECTIONS:

Using the separate answer sheet, mark the number opposite the statement which most clearly shows the amount of agreement you have with the statement:

- (1) Strong Disagreement
- (2) Slight Disagreement
- (3) Undecided, don't know if agree or disagree
- (4) Slight Agreement
- (5) Strong Agreement

Be sure that you answer all statements.

* * * * *

1. Being a student is just about the most enjoyable thing I have ever done.
2. The public should be encouraged to give more support to college students.
3. I've come to the conclusion that the work of a college student is not so important.
4. The public expects more from college students than they will get.
5. Michigan State College is the best college in the United States for me.
6. The balance in activities, etc., at M.S.C. is about all I could ask for.
7. I think that I would like many other colleges better than Michigan State.
8. Sometimes I feel as if I'm out of place being at this college.
9. The teacher of this course is just about the best one I have ever had.
10. I think that most of the students feel the teacher of this course is quite able.
11. The teacher of this course seems a little below par as far as I'm concerned.
12. The teacher of this course seems to have a very difficult time making himself understood.
13. The students in this course are about the most pleasant I have ever met.
14. The students in this class add to my enjoyment of the course.
15. I've found nothing particularly pleasing about the students I've met so far in this course.
16. Most of the students in this course have shown that they have very little to offer.
17. I get more benefit from studying psychology than I do from most other subjects.
18. There is a lot of material in psychology which I would like to understand better.
19. The importance of psychology seems to me a bit overrated.
20. I wouldn't want to take any more courses in psychology.
21. I can always find something to be happy about.

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22. I seldom let anything get me upset or worried.
23. I know many people who seem to get more out of life than I do.
24. I often feel very anxious and uncomfortable with myself.
25. I like this psychology class better than any of my other classes.
26. I am enthusiastic about the way the psychology classes are conducted.
27. I only occasionally feel satisfied with the meetings of this class.
28. I dislike this class much more than most people dislike it.
29. I feel the grade I am receiving in this course is fair and does me justice.
30. Although the grading system doesn't measure knowledge of the work very well, I still may receive a good grade.
31. I feel I am really learning only when I'm doing a great amount of work and thinking.
32. I sometimes feel that being a student does have real advantages.
33. I don't feel I've been able to gain much of consequence since I've been in college.
34. Students are given far too many worthless things to do.
35. M.S.C. has just about everything I could want in a school.
36. I probably would recommend to my friends that they come to M.S.C.
37. At times I think that M.S.C. falls a little below 'par' for what I would like.
38. I am very dissatisfied with a great many things at M.S.C.
39. I find this instructor to be very highly stimulating as a teacher.
40. The teacher of this course is usually able to hold my interest.
41. This teacher is sometimes difficult to pay attention to.
42. If I had known what this teacher was going to be like, I wouldn't have taken the course.
43. I like most of the students that I have become acquainted with in this course.
44. In general, I think the students in this class are a pretty good lot.
45. No one that I've met so far in this class has made much of an impression on me.
46. I don't think I would care to have these students as class-mates again.
47. Psychology is one of the most interesting subjects that I have taken.
48. Psychology is an interesting subject and may have practical use for me.

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50. To me, all of this psychological "mumbo-jumbo" seems a bit ridiculous.
51. I think I get more satisfaction out of life than most people my age.
52. I would consider myself an unanxious and well adjusted sort of person.
53. Sometimes I get an awful "low-down" feeling and it leaves me quite unhappy.
54. I have the feeling that I just can't do things right.
55. I can think of no other class for which I would like to exchange this one.
56. I think I like this class more than most people like it.
57. I think I would like to change this class for almost any other which was practical.
58. Very few people could dislike this class more than I dislike it.
59. The grading in this course seems quite good, and I am fairly well pleased with the mark I'm receiving.
60. The method of grading in this course is rather poor, although I'll probably get the grade I deserve.
61. The rewards I get from my studies make it worthwhile to give up other, less productive activities.
62. A student's work is one of those necessary things that I feel has to be lived through in order to gain other ends.
63. Sometimes I feel as if 'Im getting sick of "all this silly learning."
64. I often wish I was not a college student.
65. I would rather be at M.S.C. than any other college in the Big 10.
66. In general, I am satisfied with M.S.C. and what it offers me.
67. M.S.C. is a little too much of a "Rah-Rah" school to suit me.
68. I often wonder why I came to M.S.C. when there are so many other better colleges around.
69. I'm quite satisfied with the teacher of this course.
70. This instructor is better than many others I have had.
71. I think that many in this class feel the instructor is a rather poor one.
72. The teacher in this course is one of the most unsatisfactory I have ever had.
73. I would like to have many of the students in this class as class-mates again.
74. There are a few students that I've met in this course who I like being with.
75. I would prefer being in class with a different type of student.
76. I don't want any more association with most of these students.

• **Prevalence** = the proportion of a population that has a disease at a particular point in time

and the $\mathcal{H}_2$ norm of the system is given by

...and the fact that the *de novo* mutation rate is low, the *de novo* mutation rate is estimated to be 1.5×10^{-6} per site per generation (Lewin 1988).

• *Environ Monit Assess* (2008) 142:1–12. doi:10.1007/s10661-008-9400-1.

Table 1. *Salmonella* serotypes and their associated diseases

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

1. 2000年12月1日，甲企业向乙企业销售一批商品，售价为10000元，增值税为1700元，款项尚未收到。

...the

• *For the first time, the study found that the risk of a child being born with a low birth weight (less than 3,500 grams) was 10% higher for women who had a history of miscarriages.*

...and the fact that the *Journal* is a journal of the American Psychological Association, the largest and most influential organization in the field of psychology, adds to the journal's prestige and makes it a must-read for all psychologists.

... *... ..*

1. *Journal of the American Medical Association*, 2000; 283: 2689-2693.

[illegible]

1. *Journal of the American Medical Association*, 273: 1033-1034, 1995.

[illegible]

• *Journal of the American Academy of Child and Adolescent Psychiatry*, 1997, 36, 10, 1123-1130.

77. I'm sure that I would like to continue learning about psychology.
78. I find the study of psychology interesting, regardless of the fact that I may not get any benefit from such study.
79. I can't understand how so many people can claim they are interested in psychology.
80. I can't see where psychology will ever contribute anything of merit to humanity.
81. I can get enjoyment out of almost anything I do.
82. I think I get along in the world as well as, or a little better than the next fellow.
83. I'm not very satisfied with myself.
84. It seems that I always have something worrying me.
85. I like the lectures and demonstrations in this class much better than most people like them.
86. I feel satisfied with the meetings of this class a good deal of the time.
87. I seldom, if ever, feel satisfied with the meetings of this class.
88. I would like to change this class at once if I had anything else to which I could change.
89. The grading in this course does a pretty good job of measuring knowledge of the work, but I'm dissatisfied with the mark I'm getting.
90. The technique used in this course for setting grades is not very good, and I don't think I'm getting the mark I deserve.
91. The work of a student is eventually a great service to mankind.
92. I feel that I probably have more to gain and little to lose by attending college.
93. My studies take up much more of my time than I feel they should.
94. I would rather do almost anything else than be a student.
95. M.S.C. has many advantages that I couldn't find at other schools.
96. I feel that M.S.C. just meets the basic requirements of what I want in a school.
97. M.S.C. offers me very few means of seeking my goals.
98. If I had a chance, I would certainly transfer away from M.S.C.
99. I would like to get this teacher in another course if I could.
100. I think this teacher usually does an adequate job of teaching this course.
101. I haven't learned much from the teacher of this course.
102. I doubt if I could find a porrer teacher than the once who teaches this course.
103. I enjoy being with thetype of student that is taking this class.

104. I feel that I could get to like some of the students in this course if I tried.
105. There is something about the students in this class that I just don't care for.
106. This class contains about the most uninteresting group of students I have ever seen.
107. I enjoy reading and talking about psychology.
108. I have doubts as to whether I should continue taking psychology courses.
109. Now that I've had some psychology, I can't see how it ever appealed to me.
110. Studying Psychology is just about the biggest waste of time I have encountered.
111. I'm a rather happy and satisfied person.
112. Sometimes I have feelings of complete indifference which are hard to overcome.
113. At times I wish that I were a different person.
114. I have never felt really happy about anything.
115. I feel satisfied with the classmeetings of this course almost all of the time.
116. If I changed this class, I would like to change to another somewhat similar to it.
117. I dislike these psychology classes.
118. I hate these psychology classes.
119. The grades I'm getting in this course may be fair, but I don't like them.
120. I feel the grading in this course is very unfair, and certainly does not show what I know about the work.

Student Opinion Questionnaire

Directions: Using the separate answer sheet, mark the number opposite the statement which most clearly shows the amount of agreement you have with the statement, according to the following key:

- (1) Strong Disagreement
- (2) Slight Disagreement
- (3) Undecided, don't know if agree or disagree
- (4) Slight Agreement
- (5) Strong Agreement

Be sure that you answer all statements.

1. I find this instructor to be highly stimulating as a teacher.
2. I can think of no other class for which I would like to exchange this one.
3. Psychology is one of the most interesting subjects that I have taken.
4. I haven't learned much from the teacher of this course.
5. I only occasionally feel satisfied with the meetings of this class.
6. I once thought I was interested in psychology, but now I have changed my mind.
7. The teacher in this course is usually able to hold my interest.
8. I would like to change this class at once if I had anything to which I could change.
9. I enjoy reading and talking about psychology.
10. The teacher of this course seems to have a very difficult time making himself understood.
11. I like the lectures the demonstrations in this class much better than most other people like them.
12. Now that I've had some psychology, I can't see how it ever appealed to me.
13. I think that many in this class feel the teacher is a rather poor one.
14. I like this psychology class better than any of my other classes.
15. I would like to get this teacher in another course, if I could.
16. I dislike these psychology classes.
17. I find the study of psychology interesting, regardless of the fact that I may not get any benefit from such study.
18. The teacher in this course is one of the most unsatisfactory I have ever had.
19. I feel satisfied with the meetings of this class a good deal of the time.
20. I can't see where psychology will ever contribute anything of merit to humanity.
21. I think that most of the students feel the teacher of this course is quite able.
22. Very few people could dislike this class more than I dislike it.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE
CHICAGO, ILLINOIS 60637

OFFICE OF THE DEAN OF THE FACULTY

Dear Mr. Dean:

I am writing to you regarding the matter of the

appointment of a new member to the Department of the History of Arts

and Architecture.

I have been informed that you are considering

the appointment of a new member to the Department of the History of Arts

and Architecture.

I am writing to you regarding the matter of the

appointment of a new member to the Department of the History of Arts

and Architecture.

I have been informed that you are considering

the appointment of a new member to the Department of the History of Arts

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and Architecture.

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the appointment of a new member to the Department of the History of Arts

and Architecture.

I am writing to you regarding the matter of the

appointment of a new member to the Department of the History of Arts

and Architecture.

23. The importance of psychology seems to me a bit overrated.
24. The teacher of this course is just about the best one I have ever had.
25. If I changed this class, I would change to another somewhat similar to it.
26. This teacher is sometimes difficult to pay attention to.
27. I get more benifit from studying psychology than I do from most other subjects.
28. I dislike this class much more than most people dislike it.
29. I have few doubts as to whether I should continue taking psychology courses.
30. I think this teacher usually does an adequate job of teaching.
31. I hate these psychology classes.
32. To me, all of this psychological "mumbo-jumbo" seems a bit ridiculous.
33. If I had known what this teacher was going to be like, I wouldn't have taken the course.
34. I am enthusiastic about the way the psychology classes are conducted.
35. I wouldn't want to take any more courses in psychology.
36. I'm quite satisfied with the instructor of this course.
37. Psychology is an interesting subject and may have practical use for me.
38. I think I like this class more than most people like it.
39. Studying Psychology is just about the biggest waste of time I have encountered.
40. I doubt if I could find a poorer teacher than the one who teaches this course.
41. There is a lot of material in psychology which I would like to understand better.
42. I seldom, if ever, feel satisfied with the meetings of this class.
43. The teacher of this course seems a little below par as far as I'm concerned.
44. I thing I would like to change this class for almost any other which was practical.
45. I'm sure that I would like to continue learning about psychology.
46. This instructor is better than many others that I have had.
47. I feel satisfied with the class meetings of this course almost all of the time.
48. I can't understand how so many people can claim they are interested in psychology.

NAME LAST FIRST MIDDLE DATE DATE OF BIRTH AGE SEX M O R F SCHOOL CITY GRADE OR CLASS INSTRUCTOR PART

1 2 3 4 5 6 7 8

NAME OF TEST

1-1 a country
1-2 a mountain
1-3 an island
1-4 a city
1-5 a state

SAMPLE: 1. Chicago is

DIRECTIONS: Read each question and its numbered answers. When you have decided which answer is correct, blacken the corresponding space on this sheet with the special pencil. Make your mark as long as the pair of lines, and move the pencil point up and down firmly to make a heavy black line. If you change your mind, erase your first mark completely. Make no stray marks; they may count against you.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

ANSWER SHEET FOR STUDENT OP

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90

BE SURE YOUR MARKS ARE
ERASE COMPLETELY ANY ANSWER

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