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The origins of attitudes and instructional practices among teachers of Mexican American children were explored by means of a questionnaire developed to elicit information from teachers regarding their academic background, experience, career aspirations, and instructional practices, and their attitudes toward students, parents, and special programs for disadvantaged minority children. The questionnaire was administered to a sample of 72 public school mathematics teachers in 3 district ecological areas of South El Paso, Texas, and factor analysis was utilized to clarify the complex structure of the teacher variables. The findings suggested that the origins of teacher attitudes toward disadvantaged minority students might lie in the type of professional training received. Teachers' approaches, views regarding the value of compensatory and bilingual programs, and appraisal of student ability and effort, and the type of student they enjoyed teaching were related to their professional training and career aspirations. Numerous tables and figures supplement the narrative. The questionnaire used in the study is contained in the appendix. (SW)

TEACHERS OF MINORITY GROUPS: THE ORIGINS OF THEIR ATTITUDES AND INSTRUCTIONAL PRACTICES

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ABSTRACT

Numerous studies have demonstrated the effect of affective teacher-student relationships on student performance. Recently it has been shown that this effect is more pronounced among minority ethnic groups. The present study was undertaken to explore the origins of attitudes and instructional practices among teachers of Mexican-American children.

A questionnaire was developed to ellicit information from teachers regarding their academic background; experience; career aspirations; instructional practices; attitudes toward students, parents, and toward special programs for disadvantaged minority children. Three distinct ecological areas astride the migratory route followed by Mexican immigrants were identified in South El Paso. The questionnaire was administered to a sample of 72 mathematics teachers in the public schools in these areas. Factor analysis was utilized to clarify the rather complex structure of the teacher variables. Once clusters of variables with common factors were identified, the relationships among the variables making up each cluster were explored by cross-tabulations and analysis of the resulting contingency tables.

The findings of these analyses suggest that the origins of teacher attitudes toward disadvantaged minority students may lie to some extent in the type of professional training they receive. For the approach that teachers take in teaching mathematics to Mexican-American students, their views regarding the value of compensatory and bilingual programs, their appraisal of student ability and effort, and the type of student they enjoy teaching are all highly related to their professional training and career aspirations.

AFFECTIVE FACTORS ASSOCIATED WITH ACADEMIC ACHIEVEMENT

A large number of studies demonstrate unequivocally the effect of home environment on children's performance in school. Lavin[1] cites thirteen major studies that demonstrate this relationship. Much less is known, however, about the influence of the school upon these same children.

The findings of the recent U.S.O.E. study of equality of educational opportunity[2] suggests that the largest protion of variation in achievement among students who attend different schools is not due to differences in school programs, staff, and facilities but rather is a consequence of variations in the backgrounds of children when they first enter school. Nevertheless, the same study found that the school effect on achievement was greater for minority ehtnic groups. This effect appears to be largely a function of the quality of teachers.

Other studies have demonstrated that the nature of the relationship established between the student and his teachers is related to a number of educational factors. Malpass[3] measured the degree of favorableness of students' perceptions of teachers, classmates, discipline, achievement, and school in general at the elementary level. Favorable perceptions toward teachers and achievement correlated highly with grades even when ability was controlled.

Davidson and Lang[4] studied the relationship between children's perceptions of their teachers' attitudes toward them and their own self-image, academic achievement, and classroom behavior. Children's self-perceptions were foumd to be similar to their perceptions of

teachers' feelings toward them. Also the more favorable the child's perception of his teachers' feelings, the higher his achievement rating.

Ryan[5] conducted a major study of teacher characteristics and related these characteristics to pupil behavior. He found for example that pupils were responsible and participated in classes where the teacher was original and adaptable. Also at the elementary school level Christenson[6] found achievement in arithmetic and vocabulary to be greater for students whose teachers had high scores on a warmth scale.

A study that dramatically demonstrates the effect of teacher attitudes on pupil performance was conducted by Rosenthal and Jacobson[7]. Teachers were told that certain children who had been picked at random, had exceptional ability. These children subsequently outperformed other students of even higher ability, demonstrating what the author terms the "Pygmalion" theory—students, thought to have promise, benefit from the preconceived notions of their teachers since more is expected of them.

SURVEY DESIGN

In order to more fully understand the school environment and in particular the origins of teacher attitudes toward minority group children, a study was undertaken of mathematics teachers in El Paso, Texas--a school district that enrolls a large number of Mexican-American children. A questionnaire was developed to ellicit information from teachers regarding their academic background; experience; career aspirations; instructional practices; attitudes toward their students and their parents, and toward special programs for Mexican-American children. A copy of this questionnaire is included in an appendix. The

subsequent analyses of these data attempt to relate instructional practices, and teacher attitudes to the professional training and experience of teachers.

SAMPLING

Three distinct ecological areas in South El Paso were chosen for this study. These three areas shown on the accompanying map (Figure 1) are astride the migratory route followed by Mexican families as they immigrate to the United States from Juarez, Mexico which is coterminous with El Paso, Texas. First generation families reside, on the whole, in Area I near the U.S.—Mexico border. As these families become acculturated and more affluent they migrate to Area II and on to Area III. For many families this migration occurs over three or more generations.

FIGURE 1

The characteristics of these three areas are as follows:

I. The Alamo-Bowie-Aoy Area

1. This is a very low income area.
2. It consists largely of recent immigrants from Mexico.
3. The area is inhabited almost wholly by Mexican-American families. Consequently, the school population in this area is almost 100 percent Mexican-Ameaican.
4. This area of El Paso is not changing substantially in its basic ethnic and socioeconomic make up.

II. The Zavala-Henderson-Jefferson Area

1. Families residing in this area are largely working class with higher incomes than families in the first area.
2. Many of the families residing here are second generation Mexican-Americans.
3. The schools in this area are attended predominantly by Mexican-American children. In addition, approximately 20 percent of the school children are Anglo and a fraction of one percent are Negro.
4. Demographic characteristics of this area are changing quite slowly.

III. The Crockett-Bassett-Austin Area

1. This is definitely a lower middle class residential area in comparison to the other two areas.
2. A majority of the Mexican-American families who live here have resided in El Paso for three or more generations.
3. Fifty percent of the school population is Mexican-American. The other fifty percent consists mostly of children of Asian and Western European extraction partially due to the proximity of the Fort Bliss Military Reservation.
4. This area is rapidly becoming Mexican-American.

In each of the areas three schools were selected spanning the first to the twelfth grade. In each area the average child who enters the first grade of the elementary school would be expected, subsequently, to attend the other schools designated for study in that area. Table 1 describes the sample of 73 mathematics teachers that was drawn from the nine schools.

TABLE 1

FACTOR ANALYSIS OF THE TEACHER QUESTIONNAIRE

Since the original questionnaire tapped 70 characteristics of the teacher including adacemic background; experience; instructional practices; professional attitudes and activities; and the teachers' perceptions of the school in which he teaches, his students and their parents, a rather complex structure is involved. Factor analysis has been utilized to clarify the structure of the teacher variables.

Principal component analysis was used first to resolve the correlation matrix shown in Table 2 into a factor matrix. With ones on the diagonals, the factor matrix was rotated to simple structure using Kaiser's varimax technique.

TABLE 2

In all 42 of the items on the teacher questionnaire were factor analyzed. Fifteen orthogonal factors were extracted accounting for 76 precent of the total variance. Tables 2 through 4 present the intercorrelation matrix, the cummulative percentage of variance accounted for by each factor that was extracted, and the factor headings for each of the fifteen factors. The questionnaire items themselves are contained in an appendix.

TABLE 3

The varimax rotation has the property that the factors extracted are orthogonal or are uncorrelated with one another. Another interpretation of this property is that the cluster of variables that load on one factor are essentially uncorrelated or have relatively low correlations with clusters of variables that load on each of the other factors.[8] Consequently, once clusters of variables having common factors are identified, the relationships among the variables that make up each cluster can be explored by cross-tabulations and analysis of the resulting contingency tables. Such an analysis has been performed in the following sections based on the results of the factor analysis of items on the teacher questionnaire.

TABLE 4

FACTOR I: TEACHERS' ACADEMIC BACKGROUND IN MATHEMATICS

The first major factor appears to reflect the academic preparation of the teacher especially in mathematics. Teachers with the strongest background in mathematics are found largely in the high schools as might be expected. They also evidence a strong desire to teach high ability students in college preparatory programs.

FIGURE 2

This desire appears to increase rather markedly with the amount of advanced mathematics to which the teacher has been exposed. Figures 2 and 3 illustrate this trend. Over half of the teachers who have completed one semester hour or more of mathematics beyond the bachelors degree

indicate a preference for students who are enrolled in college preparatory programs. In contrast only about one-third of the teachers who have no preparation in mathematics beyond the undergraduate level evidence a similar preference for college preparatory programs.

Similarly the percentage of teachers who express a desire to teach high ability students increases with the amount of graduate level mathematics to which they have been exposed (see Figure 3). Apparently, many of these teachers may prefer to teach applied mathematics to slow students rather than teach algebra, geometry, and trigonmetry to higher ability students. The reticence of teachers with no advanced preparation im mathematics to teach advanced courses may be quite understandable.

FIGURE 3

FACTOR II: TEACHING EXPERIENCE

Factor II is indicative of the amount of teaching experience that a teacher has had. It is rather interesting to note that the more experienced teachers are, the more likely they are to view advanced preparation in mathematics as important for teachers in the elementary schools. Figure 4 shows this relationship. While all six of the teachers with less than three years of teaching ecperience see little value in advanced mathematics courses, only half of the teachers with three to nine years of experience agree with this point of view. This percentage declines even further among teachers with fifteen years of experience or more.

FIGURE 4

At the same time the more experienced teachers have a more tolerant attitude toward parents. As can be seen from Figure 5, only half of the new teachers appear to view parents as being "Reasonable in their attitudes toward teachers." However, 56.4 percent of the teachers who have completed five or more years of full-time teaching regard parents as reasonable. This finding points to an important source of concern among new teachers, their relationship with the parents of their students. Their concern may result in an unwillingness on the part of new teachers, in particular, to meet with parents in order to enlist parental support for the school's program.

FIGURE 5

FACTOR III: TEACHERS' APPRAISAL OF THEIR SCHOOL AND ITS STUDENT BODY

An examination of Factor III suggests that the amount of graduate work that a teacher has completed is associated with his attitudes toward the school in which he teaches and his students. Teachers who indicate continued college work beyond their highest degree, on the whole, view their schools as better than average. Also they rate the ability and effort of their students as being high.

There is a marked shift in the appraisal of student ability among those teachers who have completed fifteen or more semester hours of college work beyond their highest degree. Better than 30 percent of the teachers with fifteen or more semester hours rate the ability of

their students as good or excellent. In contrast, less than 12 percent of teachers with less than fifteen semester hours of advanced work rate student ability as being high. The same trend is apparent in Figure 7, where teachers were asked to rate student effort. One plausible explanation for this difference in perception may have to do with the schools' assignment policy. Teachers with more than fifteen semester hours of advanced work at the college level may, on the whole, teach higher ability students. This would certainly be the case in those instances where teachers offered courses exclusively for college bound students, for example. These same teachers would also be more assured of the school of their choice which might account for their favorable view of their school in general.

FIGURE 6

FIGURE 7

FACTOR IV: TEACHERS' ATTITUDES TOWARD CULTURALLY DISADVANTAGED STUDENTS

Factor IV apparently reflects teachers' attitudes toward culturally disadvantaged children. Those teachers who have attended summer institutes or special training programs related to the teaching of disadvantaged children evidence the greatest willingness to teach low ability students in schools that enroll culturally disadvantaged children. This relationship is quite evident when we examine Figure 8. Almost half of the teachers who have never participated in a training program or institute dealing with the problems of the disadvantaged evidence a desire to teach in schools that strongly emphasize college preparatory programs. Among those teachers who have participated in one such program, only 27.3 percent manifest a similar preference and none of the four teachers who have participated in two or more programs related to the culturally

disadvantaged express a desire to teach in schools that are primarily academically oriented.

FIGURE 8

The same teachers evidence the strongest convictions that compensatory programs should be provided in the schools and that bilingual instruction in grades one through three should be provided for Spanish-speaking children. Figure 9 demonstrates that among the teachers who have participated in a training program related to the problems of the disadvantaged, over 80 percent of the teachers are convinced of the value of compensatory programs and two-thirds of these same teachers feel that instruction in the first three elementary grades should be conducted in both Spanish and English. Contrast these attitudes with those of teachers who have never participated in such programs. Less than half see the need for special compensatory programs at extra per-pupil cost to the school district. Moreover, only 55.5 percent are convinced that Spanish should also be used in the elementary schools.

FIGURE 9

FACTORS V-VII: TEACHERS' COMMITMENT TO THE TEACHING OF MATHEMATICS

Factors V, VI, and VII appear to reflect the teacher's general enjoyment of mathematics and desire to pursue a teaching career in mathematics. As noted earlier in describing Factor I, teachers with the most interest in mathematics evidence a strong desire to teach high

ability, college bound students. Figure 10 again illustrates this relationship. Over half of the teachers who expressed the strongest commitment to the teaching of mathematics, expressed a corresponding desire to teach in a school that emphasizes preparation for college. This preference declines among teachers who express a weaker commitment to mathematics until only about one out of four teachers who appear to be indifferent to the teaching of mathematics or who would like to teach another subject prefer college preparatory programs.

FIGURE 10

Commitment to mathematics as a discipline also appears to be related to the teacher's attitude toward mathematics instruction as evidenced by Figures 11 and 12. Interestingly enough the proportion of teachers who view the learning of mathematics as primarily a memorization task rises with commitment to mathematics as a teaching discipline. Among those teachers who express a strong desire to continue teaching mathematics, 27.3 percent feel that memorization plays a primary role in mathematics instruction. This view is shared by only 6.7 percent of the teachers with the least desire to teach mathematics. This difference in outlook is even more dramatically illustrated by Figure 12. While almost three-fourths of the teachers with a strong commitment to mathematics view constant drill as necessary, only about 30 percent of the remaining teachers see drill as necessary if students are to master mathematics.

FIGURE 11

FIGURE 12

Instructional practices among teachers of mathematics are also related to their professional commitment. For example tha amount of

time spent in preparing for teaching appears to be highly related to the degree of enjoyment experienced by teachers in reading books on mathematics. This relationship can be observed in Figure 13. Among teachers who least enjoy reading books in the field of mathematics, only one-third of the teachers report two or more hours of daily home preparation for their classes. Quite in contrast, three-fourths of the teachers who apparently enjoy perusing mathematics texts indicate two or more hours of daily preparation.

FIGURE 13

This disparity in effort is again apparent in Figure 14. Only 6.7 percent of those teachers who are indifferent to the teaching of mathematics attempt to differentiate among students in testing. On the other hand, more than twice as many teachers who express a strong professional commitment to the teaching of mathematics attempt to do so.

FIGURE 14

Professional commitment appears to be related to the teacher's view of his students. Figure 15 shows a marked difference in the appraisal of student effort between teachers who intend to continue teaching mathematics and those who do not. While more than 77 percent of the former group of teachers feel that most students try to do their school work to the best of their ability, only 40 percent of the latter group agree with them. Rather, 60 percent of the teachers who are indifferent to the teaching of mathematics or who would prefer to teach another subject feel that their students are not performing to the best of their ability.

FIGURE 15

Flexibility in classroom management also appears to be strongly related to the teacher's attitude toward the subject he teaches. As Figure 16 demonstrates, the proportion of teachers who feel that most students are capable of self-government increases rapidly among those teachers who indicate that they enjoy reading books in mathematics. Among those teachers who indicate a preference for fiction in general only a little more than one in four see students as able to govern themselves; whereas, two out of three teachers who indicate that they prefer reading books in their field adopt this more open attitude toward students.

FIGURE 16

FACTOR VIII: TEACHERS' APPRAISAL OF THE HOME ENVIRONMENT OF THEIR STUDENTS

This eighth factor reflects the teacher's appraisal of the home environment of his students. Teachers who express concern with the family background and home life of their students also feel strongly that compensatory programs are needed for culturally disadvantaged children and that such programs are justified even at extra per-pupil costs to the school district. In Figure 17 this relationship is evident. Among those teachers who view their students' home background as being relatively poor almost two-thirds expressed their support for special compensatory programs at additional cost to the school district if necessary. Among the second group of teachers who do not share their colleagues view of students' home environment, exactly the

opposite view of the value of compensatory programs obtains. Eighty-three percent of these teachers express reservations as to the soundness of such programs.

FIGURE 17

The same two groups of teachers differ as markedly when asked "What kind of school would you like to work in?" Sixty-three percent of the group who were concerned about their students' home life indicated a desire to teach in schools in which the emphasis was other than college preparatory (see Figure 18). As before among the second group of teachers, two-thirds expressed a strong desire to teach in schools that strongly emphasize preparation for college.

FIGURE 18

FACTOR IX: TEACHERS' ATTENDANCE AT NSF OR NDEA INSTITUTES

Teachers who have attended NSF and NDEA sponsored summer institutes express a desire to teach high ability students. Figure 19 demonstrates this preference. Only 24.2 percent of the teachers who have not attended an institute indicate a preference for high ability students; whereas more than half of the teachers who have participated in one or more institutes express a similar preference.

FIGURE 19

Moreover, the views of teachers who have participated in NSF or NDEA institutes and those who have not, regarding bilingual instruction in the elementary schools are quite similar as Figure 20 indicates, only 5 out of 9 teachers who have attended these institutes are convinced of the soundness of such programs. The other four teachers feel that there is no basis whatsoever for instruction in English and Spanish in the first three elementary grades. About the same proportion (60 percent) of the teachers who have never participated in one of these institutes feel the same way about bilingual instruction.

FIGURE 20

On the other hand, Figure 9 shows that three-fourths of the teachers who have participated in summer institutes or special programs having to do with the teaching of disadvantaged students are convinced of the educational value of bilingual instruction for Spanish-speaking children in the first three grades. Apparently the teachers included in the sample may be categorized into three groups. One group has attended summer institutes and/or special training programs that better train them to teach underprivileged children. As the loadings on Factor IV indicate, this group of teachers prefers to teach low or mixed ability students. They also are convinced of the need for compensatory programs and bilingual instruction for culturally disadvantaged children.

The second group of teachers appears to be more subject matter oriented as indicated by their acquisition of higher degrees and participation in NSF and NDEA summer institutes. In contrast to the

first group, these teachers manifest an unwillingness to teach low ability students. They also doubt the wisdom of providing instruction in Spanish and English.

Teachers in the third group have never attended either type of institute. They apparently share the views of the teachers who have participated in NSF or NDEA sponsored institutes, since only about half of these teachers are convinced of the value of bilingual programs for Spanish-speaking children.

FACTOR X: TEACHERS' APPRAISAL OF STUDENT EFFORT

Factor X appears to reflect the teacher's appraisal of student effort as indicated by factor loadings on the two items in which teachers were asked to rate their students on this characteristic. The highest loading (-.90) occurs on the item that asked teachers to indicate the extent to which they agree with the statement "Most pupils try to do their work to the best of their ability." Also from the loadings on Factor X it appears as if the teacher's attitudes toward mathematics as a career is related to his attitude toward his students. Teachers who indicate that they plan a career in teaching mathematics also have a higher regard for their students than their colleagues as evidenced by their high appraisal of student ability and effort and their confidence in the ability of students to govern themselves. Figure 15 indicates that only 40 percent of the teachers who are indifferent to a career as a mathematics teacher rate student effort as high. Among teachers who express a willingness to continue teaching mathematics over 77 percent agree with the statement regarding student effort.

FACTOR XI: TEACHERS' ATTITUDES TOWARD PARENTS

This factor relates the teachers' attitude toward the parents of his students to his reasons for teaching in his present school. About one out of five teachers who were arbitrarily assigned to a particular school are inclined to view parents as being unreasonable in their contacts with teachers (see figure 21). In contrast, teachers who were assigned to the school of their choice are much less apprehensive about contacts with the parents of their students.

FIGURE 21

FACTOR XII: TEACHERS' ATTITUDES TOWARD STUDENTS

Factor XII again reflects the attitude that the teacher's have toward the students they teach. In general as evidenced by several other factors, teachers who indicate a desire to teach low ability students have a higher regard for their students' efforts and are more willing to allow their students to govern themselves. They also are not as concerned about turn-over in the student body of their school as are other teachers. It is rather interesting to note that these same teachers apparently feel that it is necessary to emphasize accuracy in teaching mathematics.

FACTOR XIII: TEACHERS' ACADEMIC BACKGROUND IN MATHEMATICS AT THE GRADUATE LEVEL

Whereas the first factor was highly loaded on the question that reflected the amount of undergraduate mathematics completed by the teacher, this factor strongly reflects the teacher's graduate training

in mathematics. The items that indicate the number of semester hours of mathematics beyond the bachelors degree and recent participation in summer institutes and/or in-service training programs in mathematics education are weighted heavily on this factor. In addition the loadings indicate that teachers who have acquired this additional preparation in mathematics feel that lack of mastery of ones subject matter is a more serious failing than remaining aloof from ones students. Figure 22 indicates that the proportion of teachers who feel this way increases with the amount of graduate level mathematics that they have completed until all three of the teachers with more than 20 semester hours of graduate level mathematics feel that subject mastery and organization should be the foremost concern of the teacher.

FIGURE 22

Graduate training in mathematics is also related to the teacher's policy regarding the assignment of homework. Figure 23 shows that 63.6 percent of the teachers who have the most graduate experience in mathematics make no attempt to differentiate among students when assigning homework. In contrast a little more than two-thirds of the teachers who have completed no graduate mathematics whatsoever either assign no homework at all or differentiate among students on the basis of interest or ability.

FIGURE 23

FACTOR XIV: TEACHERS' CONCEPT OF THEIR INSTRUCTIONAL ROLE

Factor XIV appears to measure the amount of empathy that a teacher has with his students. It is rather interesting to note that those teachers who feel that their major responsibility is to transmit knowledge and that they should avoid dealing with psychological difficulties that students may experience, also are not generally in sympathy with the policy of providing instruction in both Spanish and English in the first three elementary grades (see Figure 24). In contrast their fellow teachers who evidence more concern for student problems feel that there is a sound basis for providing bilingual instruction in the elementary grades. As suggested earlier, teachers appear to be identified with one of two groups with diametrically opposed views regarding their instructional role in teaching culturally disadvantaged children.

FIGURE 24

FACTOR XV: TEACHERS' APPRAISAL OF ETHNIC RELATIONS IN THEIR SCHOOLS

The highest loading on this factor is for an item which asked the teacher to appraise the extent to which discord between racial and/or ethnic groups reduced the effectiveness of teachers in his school. While only 11 teachers saw such disharmony as a problem in their schools, it is interesting to note that a greater proportion of these teachers agreed with the statement that "Learning mathematics is primarily a memorization task." While 27.2 percent of these teachers agreed with this view of mathematics instruction, only 8.9 percent of their colleagues felt the same way about the prime role of memorization in learning mathematics.

FIGURE 25

TEACHERS OF MINORITY GROUPS: THEIR ATTITUDES AND INSTRUCTIONAL PRACTICES

The findings of this study suggest that the origins of teacher attitudes toward disadvantaged minority group students may lie to some extent in the type of professional training they receive. This conclusion is supported by the analysis of the teacher questionnaire which suggests that the approach that teachers take in teaching mathematics to Mexican-American children and the type of student that they enjoy teaching is associated with their academic background. Teachers with a strong academic background in mathematics prefer to teach high ability students. This desire is evidenced by teachers with advanced degrees as well as by those who report having completed college work beyond their highest degree. This same preference for high ability students is manifested by teachers who report having attended NSF and NDEA sponsored summer institutes.

Despite the fact that teachers who report graduate work beyond their highest degree appraise the ability and effort of their students as high and have a high regard for the school in which they teach, in general they do not see the necessity of providing instruction in both Spanish and English in the elementary grades. Moreover, teachers whose academic program has included a great deal of formal mathematics or who have attended summer institutes in mathematics education feel that mastery of subject matter by mathematics teachers is relatively more important than developing a warm personal relationship with their students.

A high regard for their present students also obtains among teachers who evidently enjoy teaching mathematics and plan to pursue careers as teachers of mathematics. These teachers view their students as being of high ability, as trying hard to succeed in school, and as being quite capable of governing themselves if permitted to do so. However, they too prefer to teach high ability students.

The instructional practices of teachers with strong academic backgrounds in mathematics as well as those who hope to continue teaching mathematics differs somewhat from their fellow teachers. On the whole, they are more likely to prepare their own tests and examinations than to use standardized tests or tests included with the text. These teachers also assign more formal homework to their students, whereas many of their colleagues either do not assign homework at all or allow the students more choice in homework assignments. At the same time there appears to be more use of drills and greater stress on accuracy among this group of teachers.

It is rather interesting to note that mathematics teachers appear to differ on the degree to which they consider the learning of mathematics to be primarily a matter of memorization. While the bulk of the teachers surveyed disagree with this view, eight out of 70 teachers responding to this question felt that memorization plays a primary role in learning mathematics. Three teachers were undecided. However, of these 11 teachers seven had completed less than 10 semester hours of college level mathematics.

It is also of importance to note that the school district's policies regarding the assignment of teachers appears to be related to the

teacher's attitude toward parents of his students. Teachers' who were not assigned to schools of their choice are apprehensive about the demands of parents. They view parents, on the whole, as being unreasonable in their attitudes toward teachers. This view apparently is ameliorated to a large extent, however, as teacher's gain experience as evidenced by Factor II. Not only are experienced teachers less likely to view parents as unreasonable, they also are more convinced of the value of advanced mathematics courses for elementary teachers who must teach mathematics to their students.

Mathematics teachers also apparently differ somewhat in their views of their role as a teacher. Ten of 71 teachers feel that their major responsibility is primarily to transmit knowledge and that they should as far as possible avoid dealing with students who experience psychological difficulties. Five other teachers are undecided on this matter. More than half of these same teachers are not convinced of the value of bilingual instruction for Mexican-American children in grades one through three. Exactly the opposite obtains among other teachers. Those teachers who feel that they should be concerned about students who experience such difficulties are also more predisposed toward instruction in both Spanish and English in the elementary school.

The type of institute and/or in-service training program that teachers attend also appears to differentiate mathematics teachers. Teachers who have attended special institutes or training programs designed to better enable them to work with culturally disadvantaged students are the most convinced of the need for compensatory programs for culturally disadvantaged students and of the value of bilingual

instruction in the elementary grades even if such programs require greater per-pupil expenditures. They also evidence a willingness to teach low or mixed ability students.

Finally, teachers who express concern as to the quality of the home life of their students are generally more willing to teach in schools that offer special programs for culturally disadvantaged children. They also believe that there is a sound educational basis for offering such programs.

NOTES

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TABLE 1

SAMPLE OF TEACHERS
DRAWN FROM THE EL PASO, TEXAS
PUBLIC SCHOOLS

SCHOOL	GRADE	NO. OF TEACHERS
AREA I		
Aoy	1	2
	3	2
	6	2
Alamo	1	3
	3	2
	6	3
Bowie	7	2
	9	4
	10-11-12	3
AREA II		
Zavala	1	4
	3	4
	6	3
	7	2
Henderson	6	2
	7	1
Jefferson	9	6
	10-11-12	3
AREA III		
Crockett	1	4
	3	4
	6	2
	7	1
Bassett	6	2
	7	2
Austin	9	4
	10-11-12	5
TOTAL		72

TABLE 2

TEACHER QUESTIONNAIRE

INTERCORRELATION MATRIX

N = 61

QUESTION	10	13	14	15	17	18	19	20	21	27	29	31	34	37	38	39	40	42	43	44	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	64	65	66	67	68	69	70
10		-.02	.34	.26	.18	.31	-.03	.29	.13	-.12	-.07	-.09	.05	.03	.05	-.27	.06	.05	-.10	-.17	.05	-.09	.03	.56	.12	.15	.12	.38	.18	.20	-.13	.06	-.11	.02	.00	.03	.11	.02	-.05	-.08	.04	.17
13			-.15	-.14	.30	-.18	.04	.13	.21	.34	-.05	.31	-.06	-.07	-.09	-.15	.14	.15	-.21	-.28	-.06	.10	.16	.16	.07	-.04	.36	.05	.13	.00	.14	.00	.14	.04	-.21	.21	.14	-.11	-.16	.17	.08	.04
14				.72	.08	.50	.05	-.03	.03	-.36	.06	- 36	.05	.31	-.13	-.19	.22	-.01	-.20	-.23	.00	-.17	-.09	.03	.12	.29	.10	.43	.07	-.02	-.26	.01	.23	-.02	.22	-.02	-.24	-.10	.11	.07	.09	.29
15					.01	.46	-.15	.08	-.06	-.38	.03	-.24	.07	.15	-.20	-.09	.07	.09	-.23	-.23	.11	-.22	-.04	-.16	.03	.25	.02	.38	-.07	.03	-.27	-.04	.09	.01	.33	-.07	-.25	-.22	-.02	-.01	-.02	.10
17						.19	.07	.25	-.04	-.37	.24	.49	-.26	-.22	.10	.13	.23	.15	-.08	-.24	.35	.22	.05	-.03	.11	.06	.08	.14	.10	.06	.02	-.17	.25	.01	-.30	.14	02	-.11	.11	.13	.08	.03
18							-.22	.03	-.13	-.26	.10	-.25	-.01	.07	-.03	-.01	.28	.06	-.29	-.24	.13	-.22	-.02	.18	.20	.29	.02	.32	.14	.05	-.08	-.07	.28	-.05	.06	- 07	-.10	-.02	.24	.05	.16	.23
19								-.07	.00	.07	-.23	.03	-.18	-.07	.14	-.15	.10	-.10	.07	- 03	-.18	-.04	-.01	.01	-.04	-.23	.13	.05	.15	.02	-.03	-.14	.02	.10	-.03	.00	-.16	-.04	.10	-.03	-.01	-.02
20									.20	.19	.10	.34	-.12	-.18	.15	-.16	.02	.28	-.05	-.03	.07	.03	.06	-.06	-.06	-.27	.18	.07	-.11	.04	-.14	-.02	.00	.26	-.23	.13	.07	.08	-.02	.04	.21	.15
21										-.08	-.06	-.06	.26	.18	-.24	-.28	.29	-.16	-.12	-.18	-.14	-.23	.29	.23	-.16	.09	.18	.05	.11	-.16	.08	.15	.00	-.11	.06	-.03	.13	.12	-.29	.12	.01	.18
27											-.03	.82	-.29	-.30	.06	.18	-.10	.07	.10	.14	.18	.56	-.09	.03	.00	-.06	.11	-.17	-.18	-.09	.04	-.11	.13	.21	-.54	.26	-.02	.11	-.05	.04	.23	.12
29												.00	.02	.22	.12	.07	.13	.06	.02	-.14	.22	.15	-.20	.16	.13	-.05	-.08	.04	-.17	.13	-.06	-.12	.19	.04	-.23	-.04	-.06	-.03	-.06	.01	-.03	-.08
31													-.35	-.45	-.01	.22	-.16	.23	.03	.04	.17	.38	-.10	-.18	-.08	-.09	.16	-.13	-.20	.03	.12	-.15	.10	.15	-.52	.23	-.03	-.01	-.04	.09	.18	.10
34														.43	.01	-.22	.10	-.12	-.18	.07	-.21	-.14	.00	.16	.07	.09	-.04	.00	-.02	.00	.12	-.30	-.20	-.32	.31	-.24	.11	.26	-.16	.20	-.03	.21
37															-.03	-.06	.02	-.29	-.04	.01	-.14	-.01	-.12	.20	.17	.19	-.15	.00	-.03	.02	-.27	.02	-.04	.00	.21	-.06	.05	.03	-.08	.03	.07	-.06
38																-.12	.00	.03	.28	.43	.08	-.03	-.10	.05	.01	-.07	-.07	.07	.19	-.23	.10	.11	-.14	.00	-.09	-.03	.00	.12	.00	-.29	-.07	-.12
39																	-.25	.04	-.14	-.09	.27	.22	-.13	-.01	-.01	.15	-.35	-.28	-.09	.07	-.19	.00	.10	-.06	-.13	.37	-.02	-.17	.20	.11	.11	.11
40																		-.05	.05	-.04	-.07	-.18	.00	.35	.08	-.08	.15	.31	.18	.03	.14	.05	.48	.13	-.02	-.20	.05	-.03	.03	-.11	.00	.09
42																			.02	-.11	.20	-.02	.00	.00	-.05	-.08	.13	-.06	-.04	-.27	-.08	.00	.01	.09	-.23.	.00	.14	-.12	.27	-.12	.09	.00
43																				.49	.00	.06	-.04	-.32	-.39	-.27	-.07	-.03	-.03	-.14	.02	.02	-.02	.14	-.07	-.16	.09	-.01	-.13	-.48	-.37	-.18
44																					-.18	-.07	.00	-.26	.06	-.15	-.19	-.02	-.07	-.13	.04	.0	-.10	.11	-.06	-.13	.00	.11	-.10	-.27	-.15	-.11
48																						.25	-.06	-.14	.06	.05	-.22	-.10	-.20	-.18	-.32	-.14	.22	.20	-.27	.10	.00	-.16	.01	-.04	-.02	.11
49																							-.33	.13	.00	-.25	-.02	-.33	-.33	-.10	-.15	-.07	.05	.14	-.31	.29	.20	.21	-.04	.16	.14	.09
50																								.04	.12	.11	.02	-.03	.13	.05	-.05	-.10	.03	.18	.16	.08	-.14	-.16	-.05	-.19	-.15	-.02
51																									.36	.07	.13	.08	-.16	-.01	-.07	.13	.28	.14	-.04	.10	.05	.00	.11	.00	.34	.02
52																										.15	.23	.12	.10	.06	.09	-.27	.07	.03	-.02	.16	.11	.04	.20	.06	-.05	.19
53																											.02	.20	.15	.10	-.05	.06	-.03	-.02	-.10	.04	-.18	-.14	.21	.02	.14	.00
54																												.17	.14	.06	.30	.04	.03	.17	-.06	.11	.17	.15	-.03	.10	-.03	.00
55																													.25	.20	.06	-.07	.28	.16	.04	-.18	-.07	-.10	.02	.02	-.04	.05
56																													-.07	.12	.28	-.09	-.06	.03	.11	.10	-.03	.13	.14	.11	-.10
57																														.33	-.23	-.03	.04	-.02	-.14	-.07	-.07	.02	.08	.00	.00
58																															.07	-.09	-.25	-.02	-.15	.13	.21	-.18	.07	-.14	-.17
59																																-.27	-.33	.06	.16	.09	.25	.02	.25	.15	.06
60																																	.35	-.18	-.05	-.23	-.30	-.05	-.10	.00	.09
61																																		-.32.	.00	.09	-.19	-.12	-.19	-.13	-.02
62																																			.12	-.06	.09	-.06	-.03	-.14	.11
64																																				.09	.11	.17	.26	.28	.47
65																																					.12	.00	.12	.08	-.12
66																																						-.12	.25	.22	.15
67																																							.00	.23	.11
68																																								.26	.18
69																																									.22
70																																									

TABLE 3

CHARACTERISTIC ROOTS AND CUMULATIVE
PERCENTAGE OF VARIANCE ACCOUNTED FOR BY
THE FIFTEEN FACTORS EXTRACTED IN THE FACTOR ANALYSIS

FACTOR	CHARACTERISTIC ROOT	CUMULATIVE PERCENTAGE OF TRACE
1	4.7103	11.22
2	3.9237	20.56
3	3.1084	27.96
4	2.9129	34.89
5	2.1152	39.93
6	2.0498	44.81
7	1.9386	49.43
8	1.7890	53.69
9	1.6151	57.53
10	1.5094	61.13
11	1.3805	64.41
12	1.2898	67.48
13	1.2260	70.40
14	1.1637	73.17
15	1.1133	75.82

TABLE 4

ORTHOGONAL FACTOR MATRIX

VARIMAX ROTATION

QUESTION	FACTOR LOADINGS								
	I	II	III	IV	V	VI	VII	VIII	IX
10	-0.0510	-0.5237	0.0146	-0.1113	-0.0131	0.1546	-0.2875	-0.1381	-0.3969
13	0.4350	0.0969	-0.4575	-0.3395	-0.0677	-0.1116	-0.2147	0.0973	-0.0612
14	-0.2548	-0.8291	-0.1396	0.0216	-0.0251	-0.1282	0.0259	-0.1538	0.0697
15	-0.2549	-0.7694	-0.2062	0.0228	-0.1272	0.0458	0.1689	-0.0022	-0.0746
17	0.5401	-0.1550	-0.2384	0.0658	-0.0503	-0.1340	-0.2625	-0.0465	-0.1822
18	-0.1523	-0.5429	-0.1011	0.3573	0.0448	-0.2685	-0.0719	0.0056	-0.0863
19	0.0382	0.0289	0.0125	0.0571	-0.0898	-0.0279	-0.1380	-0.0025	0.0502
20	0.2562	-0.1042	0.0420	-0.1485	0.0013	0.0301	0.0751	-0.1051	-0.8127
21	-0.1399	0.0914	-0.1886	-0.6580	-0.0284	-0.2288	-0.1727	-0.1570	-0.2094
27	0.8567	0.2201	0.0807	-0.0546	0.0298	0.0301	0.1327	-0.1393	0.0155
29	0.0653	-0.0277	-0.0329	-0.0328	0.0621	-0.1933	0.1355	0.1917	-0.0378
31	0.8602	0.1709	-0.0733	0.0352	0.0141	0.0778	0.1324	-0.0692	-0.1820
34	-0.3912	0.0108	-0.0581	-0.3675	0.4297	0.0633	-0.0379	0.3068	0.0432
37	-0.3844	-0.1912	0.0384	-0.3462	-0.0309	0.1294	0.0233	0.0820	0.3420
38	0.1071	0.0218	0.6188	0.0723	0.1993	0.0812	-0.3550	0.1372	-0.1381
39	0.1456	0.2971	-0.1691	0.3996	-0.1655	0.1122	0.0322	-0.3205	0.2993
40	-0.0758	-0.1417	0.0203	-0.1013	0.0464	-0.8532	-0.1680	0.0252	-0.0641
42	0.1495	0.0017	-0.1442	0.3944	-0.1293	-0.0162	0.0264	0.1946	-0.5206
43	0.0361	0.1118	0.6523	-0.0876	-0.1455	-0.0825	-0.0024	0.0863	0.0521
44	0.0512	0.1324	0.8275	-0.0468	0.0857	0.0678	0.0579	0.0415	0.0529
48	0.2219	-0.0786	-0.0354	0.0813	-0.2926	0.0272	0.1019	-0.2124	-0.0632
49	0.4490	0.1531	-0.0601	-0.0119	0.1096	0.1267	0.3948	-0.2019	0.1745
50	-0.1637	0.2274	-0.0431	-0.2633	-0.4276	0.0099	-0.2379	-0.0972	-0.2498
51	-0.0667	0.1338	-0.1615	-0.0111	-0.0074	-0.4236	-0.1695	0.0267	0.0224
52	-0.0336	-0.0816	-0.0617	0.0465	0.0313	-0.0642	-0.0174	-0.1480	0.0659
53	0.0986	-0.3541	-0.0792	0.0464	-0.1602	0.1956	-0.3200	0.0556	0.3323
54	0.2700	-0.2236	-0.1974	-0.1382	0.1247	-0.1302	-0.0489	0.1248	-0.1150
55	0.0483	-0.6555	0.1139	-0.0366	-0.0254	-0.2891	-0.2476	0.1076	-0.0156
56	-0.0725	-0.0782	-0.0261	0.0661	0.0094	-0.0773	-0.8239	-0.0045	0.0735
57	0.0119	-0.0445	-0.1547	-0.0368	-0.0237	0.0115	0.0317	0.0915	-0.0304
58	0.1666	0.1920	-0.0076	-0.0298	0.4988	-0.2063	-0.1431	0.2990	0.0828
59	-0.1411	0.0595	-0.0340	-0.0973	0.4337	-0.0160	-0.4375	-0.1428	-0.0082
60	0.2155	-0.1608	-0.0670	0.0038	-0.3148	-0.7322	0.1780	-0.0342	0.1420
61	0.2875	-0.0920	0.2417	-0.1816	-0.6007	-0.1930	0.1794	-0.0248	-0.0958
62	-0.7022	-0.0819	-0.1150	-0.0822	0.1273	0.0971	0.0632	0.0139	0.0665
64	0.2337	0.0994	-0.1785	0.0703	0.0174	0.1856	-0.1577	-0.7040	0.0427
65	-0.0212	0.1787	-0.0355	-0.0240	0.0464	0.0521	-0.1120	0.0197	-0.0907
66	0.0006	0.0686	0.1617	-0.1350	0.7132	0.0734	0.1202	-0.2013	-0.1038
67	-0.0638	-0.0108	-0.0651	0.7469	-0.0763	0.0051	-0.1762	-0.1145	-0.0111
68	0.1256	-0.0481	-0.5361	-0.0716	0.4334	0.1039	-0.0691	-0.2025	0.1312
69	0.2164	-0.0438	-0.1725	0.2117	0.1412	-0.0005	-0.0412	-0.1743	-0.1656
70	0.0560	-0.1607	-0.0562	-0.0059	0.1089	-0.1278	0.0988	-0.8180	-0.1086

QUESTION	FACTOR LOADINGS						COMMUNALITIES
	X	XI	XII	XIII	XIV	XV	h^2
10	-0.1055	-0.0075	-0.0039	0.1045	0.2050	-0.1951	0.6750
13	-0.1435	-0.1144	-0.0357	-0.1466	-0.2058	-0.0662	0.7026
14	-0.0181	-0.0617	0.0927	0.0328	-0.0977	0.1177	0.8557
15	0.0790	0.1363	-0.0669	0.0119	-0.0960	0.1655	0.8184
17	-0.1047	-0.1001	-0.2027	0.4205	0.0366	0.0655	0.7461
18	-0.2426	0.2620	0.0777	0.1514	0.0488	0.0832	0.7083
19	0.0129	-0.8459	0.0415	-0.1532	0.0480	0.1304	0.7964
20	0.0611	-0.0275	0.1300	0.0731	0.0547	-0.0308	0.8091
21	-0.0956	0.1303	0.1323	-0.1616	0.1854	-0.0504	0.7546
27	-0.0330	-0.0498	0.0973	-0.0097	-0.0928	0.0496	0.8551
29	-0.1065	0.0718	0.0738	0.7055	0.0897	-0.0332	0.6337
31	0.0791	0.0059	-0.0919	-0.0346	0.0348	0.0790	0.8609
34	-0.0847	0.2372	0.2331	0.0587	-0.0785	0.0287	0.7059
37	-0.1166	-0.0086	0.4577	0.2732	-0.0163	-0.1038	0.7564
38	-0.1499	-0.1897	0.0004	0.2824	-0.2222	0.0969	0.8073
39	0.1804	0.2662	0.0491	0.2894	0.1036	0.0740	0.7368
40	-0.0340	-0.0680	0.0248	0.0392	0.0299	-0.0463	0.8104
42	0.0245	0.1665	-0.0381	-0.0421	-0.4259	-0.1403	0.7580
43	0.3377	-0.1267	-0.3105	0.0110	-0.1040	-0.2360	0.7783
44	0.0454	0.0572	-0.0118	-0.1441	-0.0143	0.0548	0.7564
48	-0.0087	0.2290	-0.2185	0.5536	-0.2382	-0.0325	0.6737
49	0.0003	-0.1766	0.1576	0.3181	-0.1697	-0.3242	0.7750
50	-0.2935	0.1289	-0.1367	-0.2477	0.0085	0.3391	0.7589
51	-0.3702	-0.0606	0.6021	0.0901	-0.0927	-0.0499	0.7804
52	-0.8953	0.0614	0.0415	0.0613	0.0541	-0.0786	0.8653
53	-0.1616	0.5066	0.2146	-0.1002	0.0955	0.2379	0.8279
54	-0.3307	-0.1522	-0.0781	-0.4607	-0.0868	-0.3144	0.7019
55	-0.0581	-0.0348	-0.0380	-0.0983	0.2422	-0.0070	0.6781
56	-0.0234	-0.1204	0.0656	-0.1269	-0.0151	-0.1078	0.7540
57	-0.0523	-0.0063	-0.0088	0.0130	0.8827	0.0137	0.8208
58	-0.1675	0.0835	-0.3653	-0.2906	0.2666	-0.0604	0.8013
59	0.4030	0.2217	0.1734	-0.0940	-0.2859	-0.0726	0.7718
60	-0.0296	0.0060	0.0296	0.1299	-0.0607	0.1659	0.8148
61	-0.0600	0.0655	0.2788	-0.0894	0.0812	-0.2103	0.7669
62	-0.0234	-0.1035	-0.1435	-0.1633	-0.0723	0.1377	0.6368
64	-0.1327	-0.0193	0.1097	-0.0033	-0.1683	-0.0793	0.7230
65	-0.0735	0.1178	0.0137	-0.0174	-0.0186	-0.8674	0.8327
66	-0.0948	-0.0200	0.1507	-0.0885	-0.0116	-0.1061	0.6802
67	-0.1480	-0.0169	0.1980	-0.0632	-0.0038	-0.0033	0.6817
68	0.1007	0.0180	0.1525	0.0191	0.1067	-0.0906	0.6259
69	0.1127	0.0378	0.7443	-0.0981	0.0435	0.0075	0.7824
70	-0.0594	0.0110	0.0324	-0.0633	0.0217	0.0801	0.7667

FIGURE 1

METROPOLITAN EL PASO

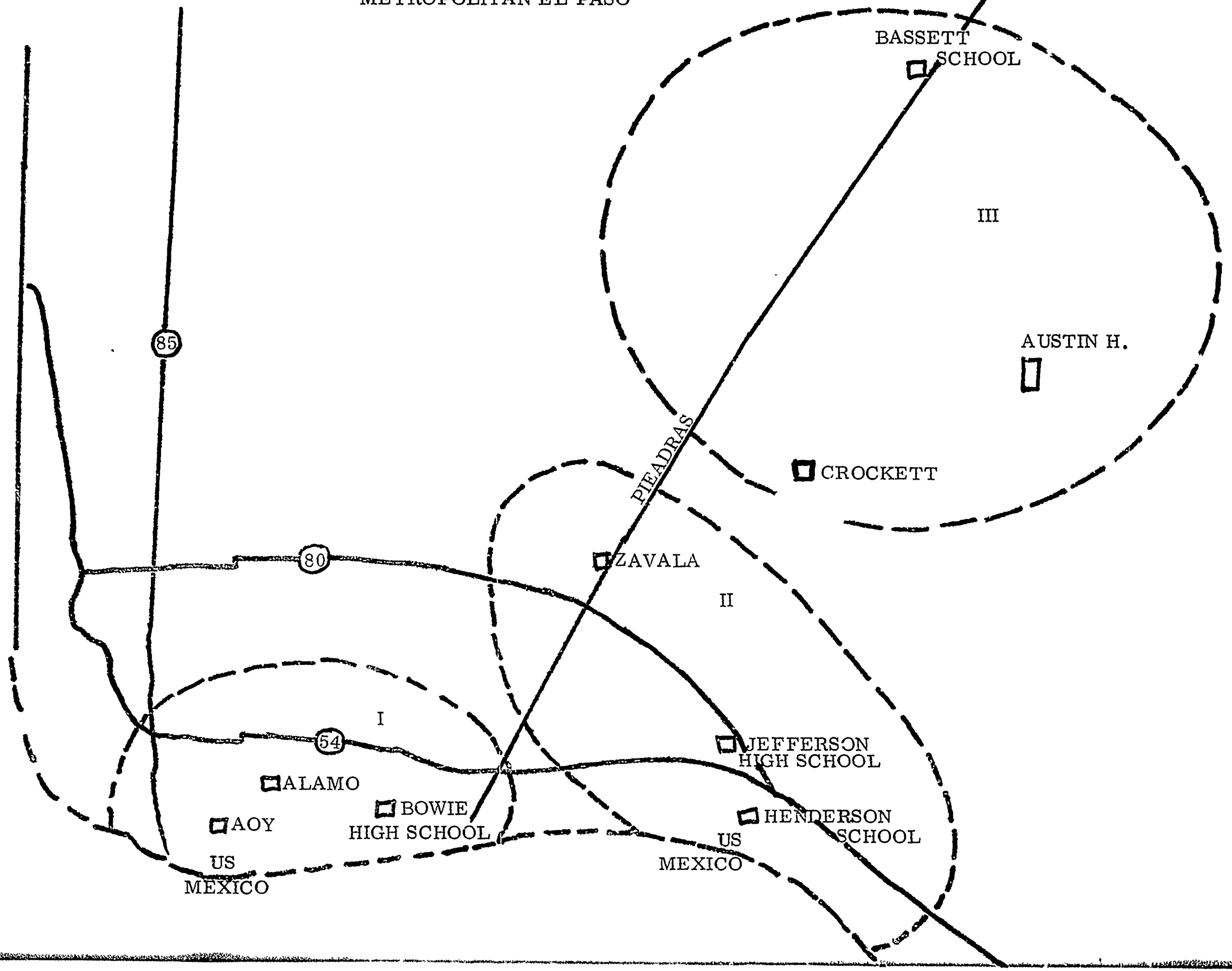
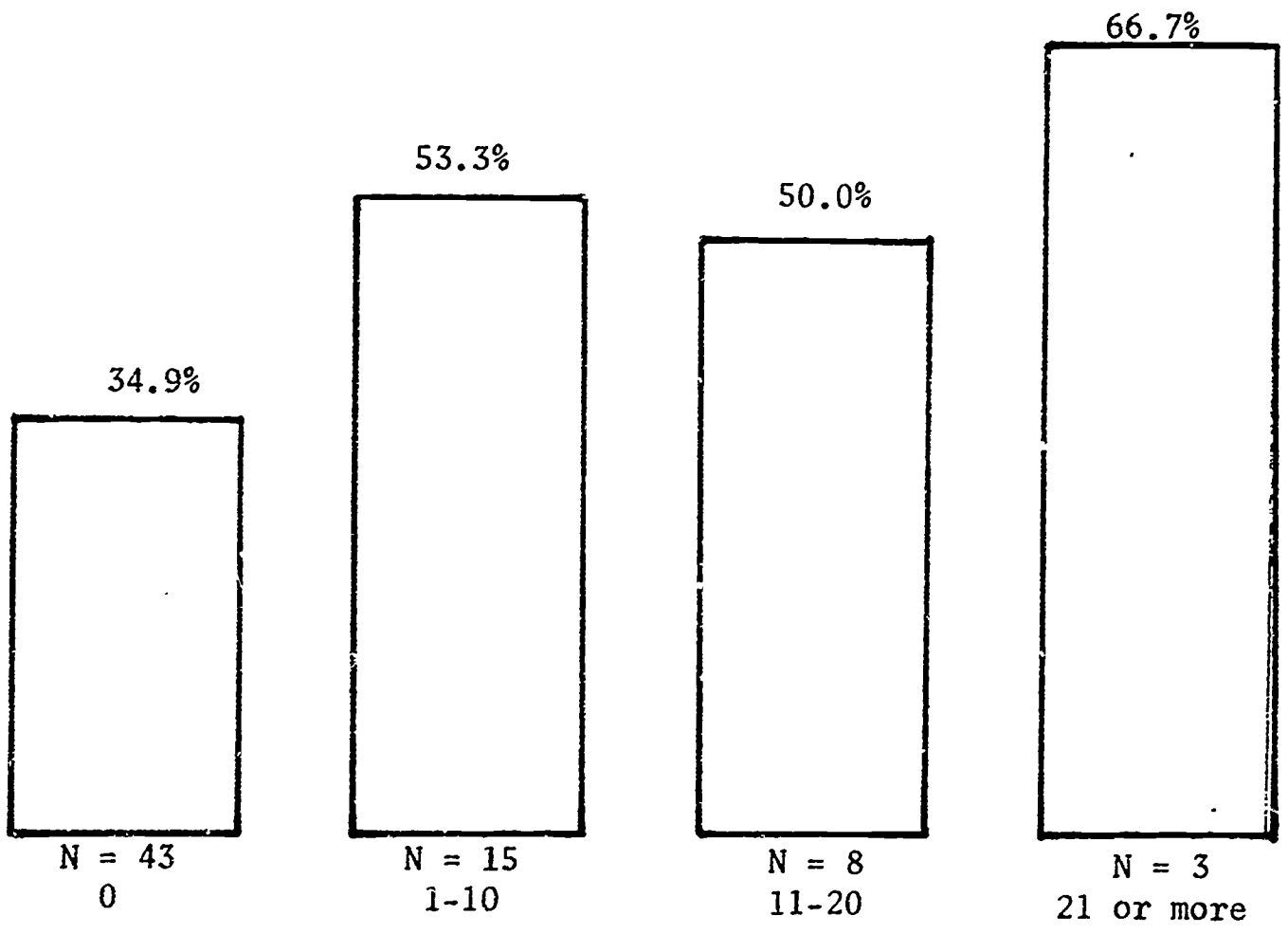


FIGURE 2

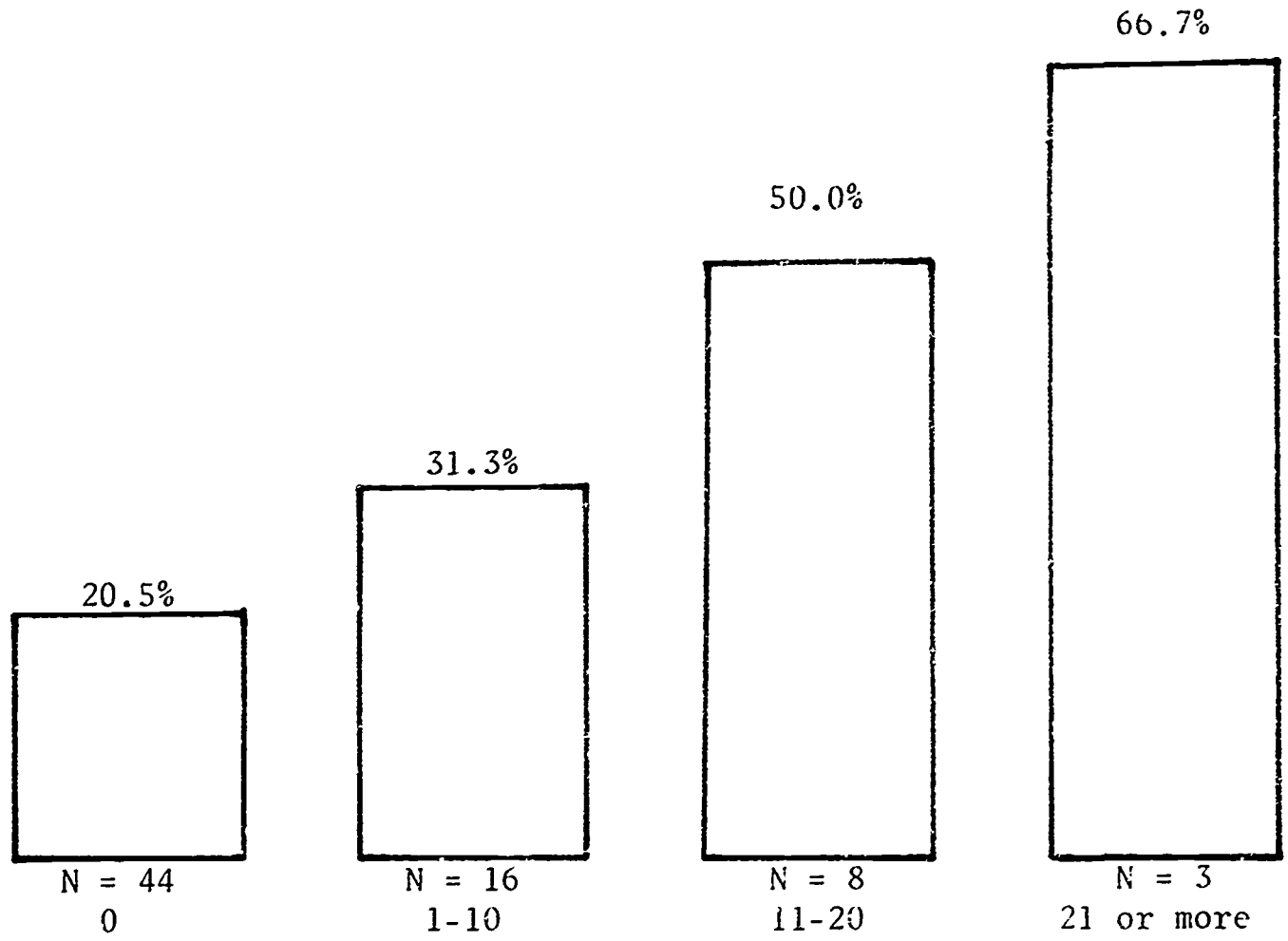
PERCENTAGE OF TEACHERS WHO DESIRE TO TEACH IN A SCHOOL THAT EMPHASIZES COLLEGE PREPARATION



Semester Hours in Mathematics Beyond the Bachelors Degree

FIGURE 3

PERCENTAGE OF TEACHERS WHO DESIRE TO TEACH HIGH ABILITY STUDENTS



Semester Hours in Mathematics
Beyond Bachelors Degree

FIGURE 4

PERCENTAGE OF TEACHERS AGREEING WITH THE STATEMENT "CONSIDERING THE AMOUNT OF EFFORT THEY REQUIRE, COURSES IN ADVANCED MATHEMATICS IN COLLEGE AND GRADUATE SCHOOL ARE OF RELATIVELY LITTLE USE TO THE TEACHER OF ARITHMETIC IN ELEMENTARY SCHOOL"

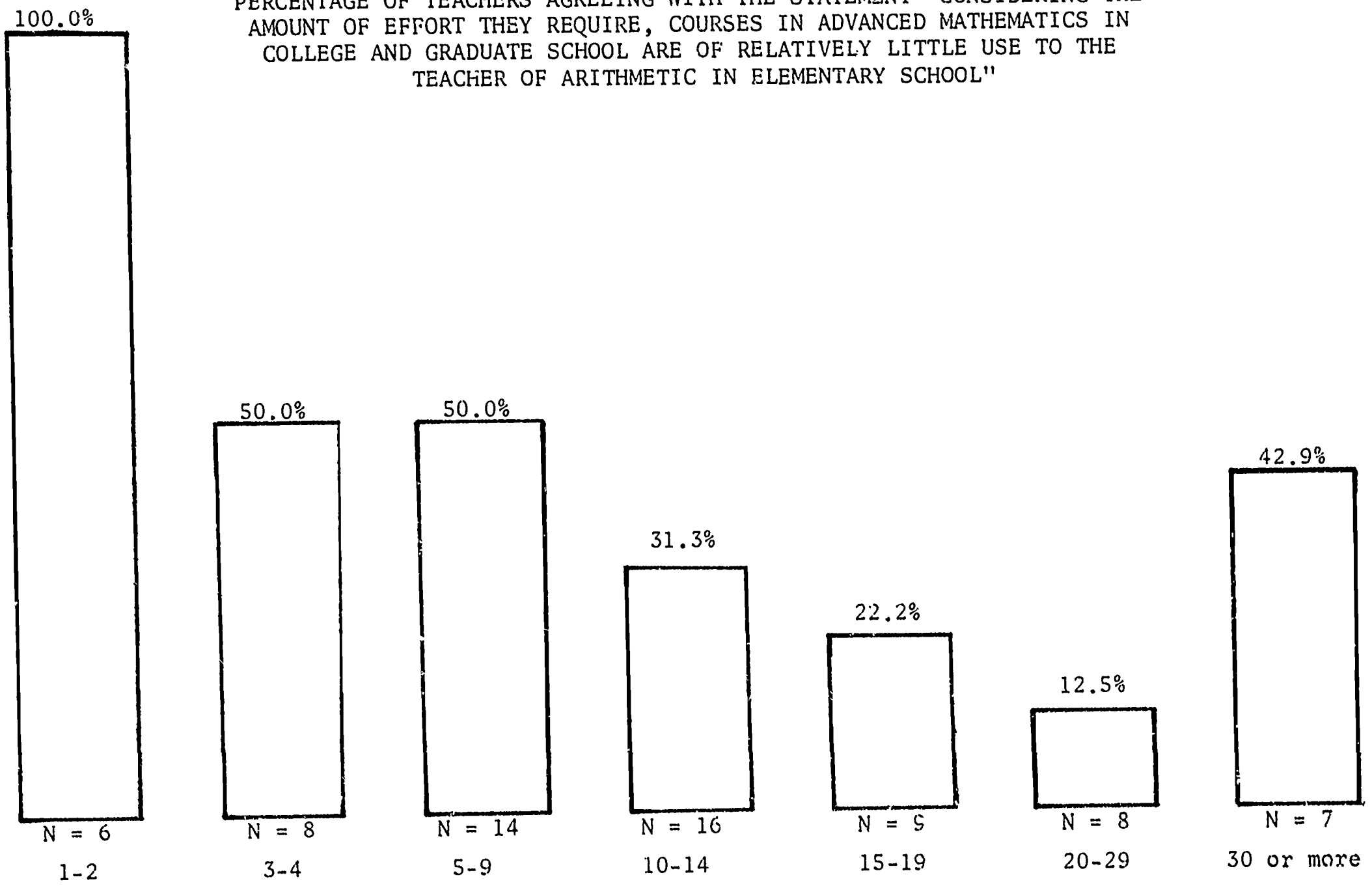
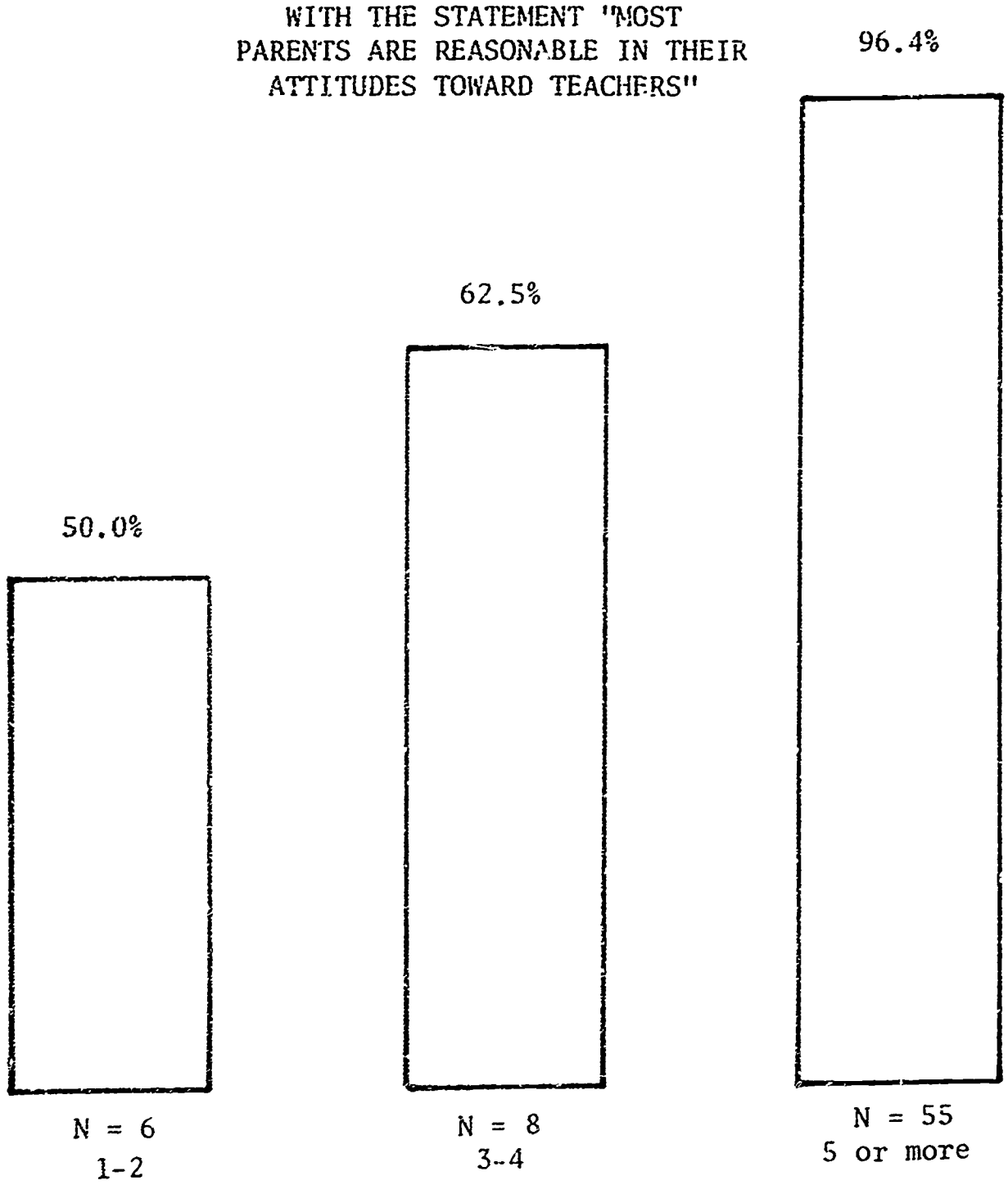


FIGURE 5

PERCENTAGE OF TEACHERS AGREEING WITH THE STATEMENT "MOST PARENTS ARE REASONABLE IN THEIR ATTITUDES TOWARD TEACHERS"



Years of Full-Time Teaching Experience

FIGURE 6

PERCENTAGE OF TEACHERS WHO RATE THE ACADEMIC ABILITY OF STUDENTS AS EXCELLENT OR GOOD

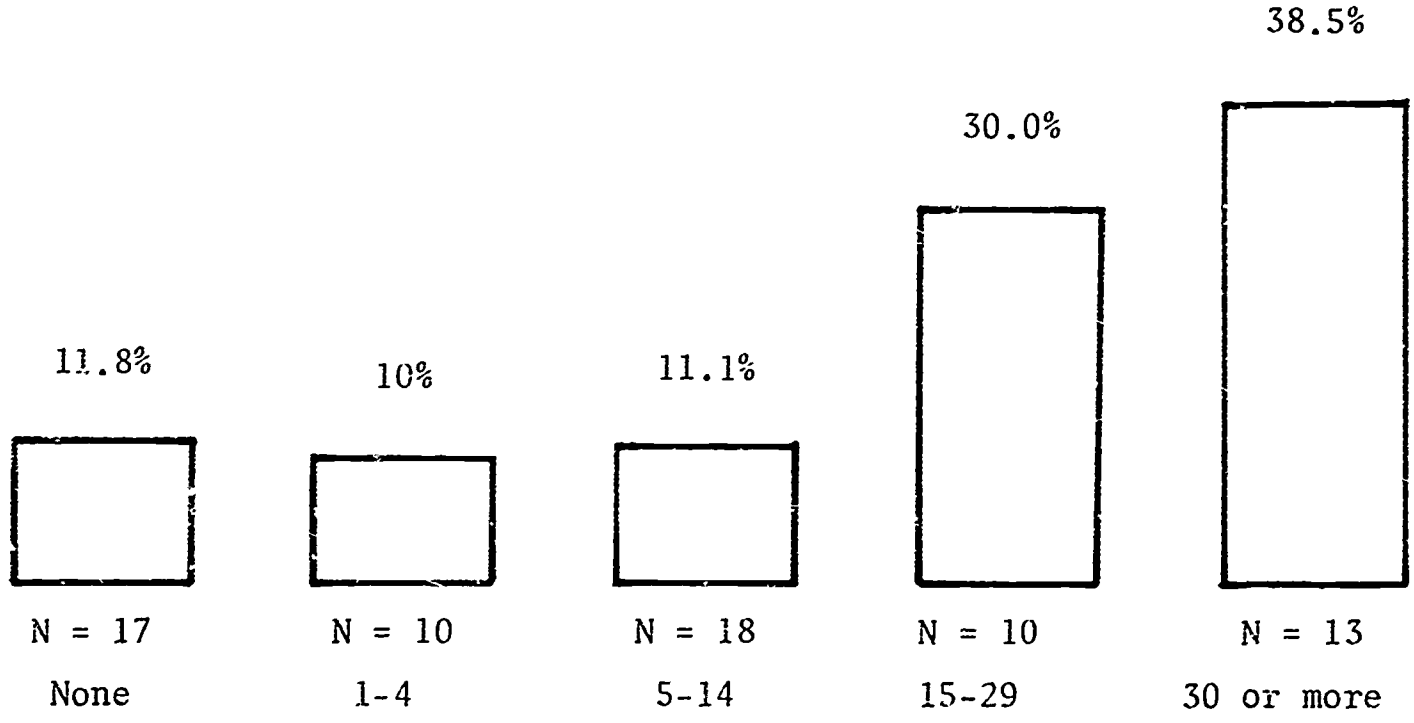
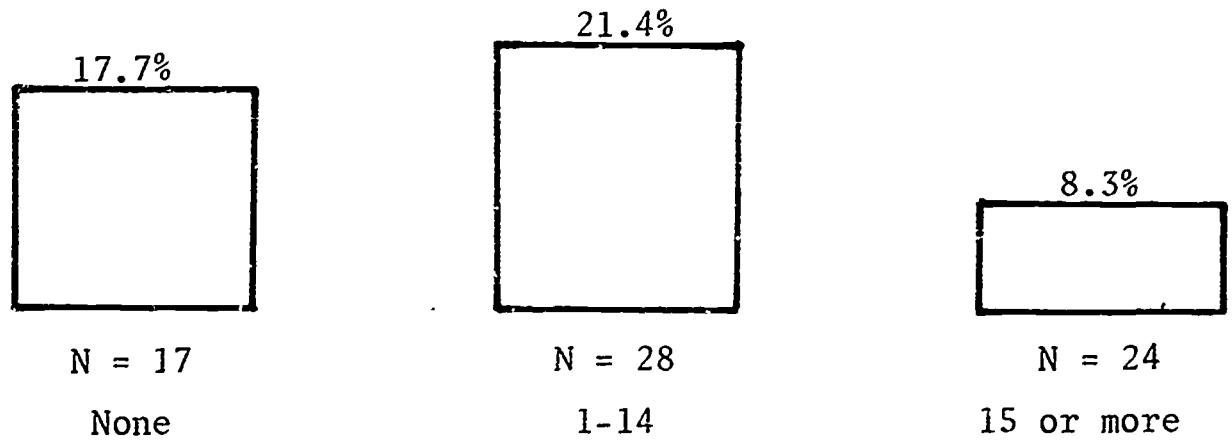


FIGURE 7

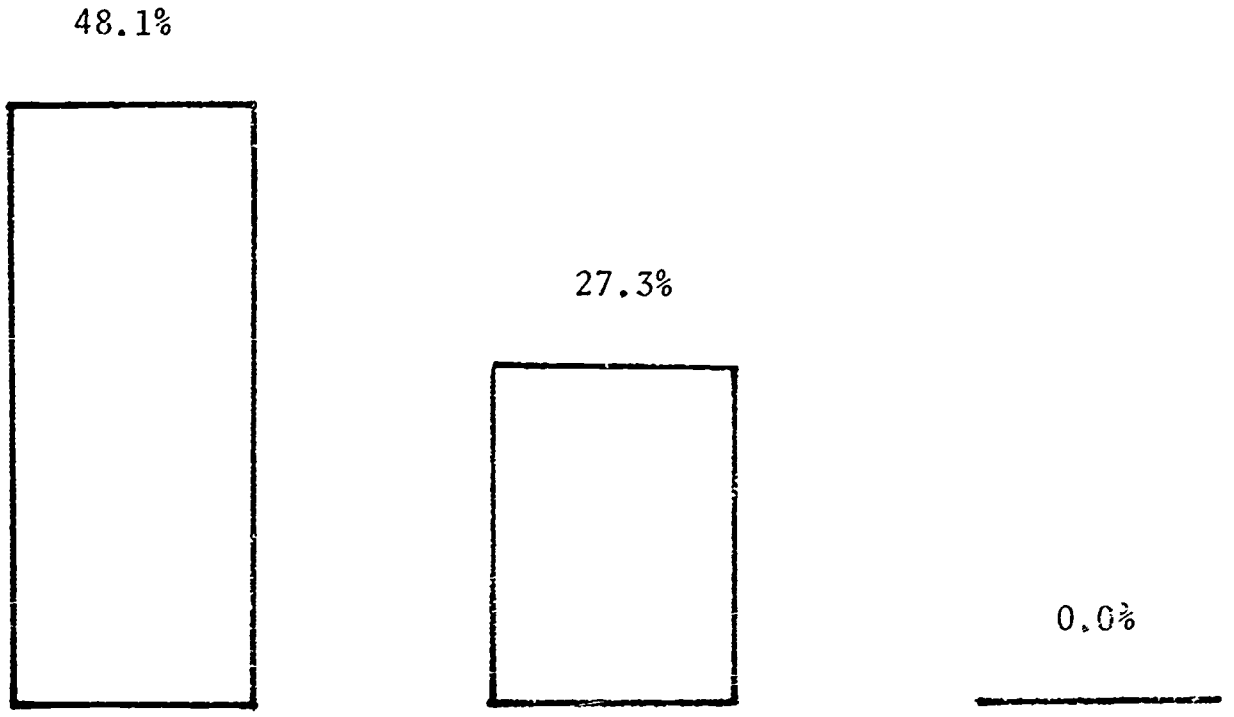
PERCENTAGE OF TEACHERS
WHO RATE STUDENTS'
EFFORT AS FAIR OR POOR



Semester Hours Beyond The Highest Degree

FIGURE 8

PERCENTAGE OF TEACHERS WHO WOULD LIKE TO TEACH IN AN ACADEMIC SCHOOL WITH STRONG EMPHASIS ON COLLEGE PREPARATION



Number of Summer Institutes Attended Related To The Culturally Disadvantaged

FIGURE 9

PERCENTAGE OF TEACHERS WHO BELIEVE THAT THERE IS A SOUND BASIS FOR COMPENSATORY PROGRAMS AND FOR INSTRUCTION IN BOTH ENGLISH AND SPANISH IN GRADES ONE THROUGH THREE

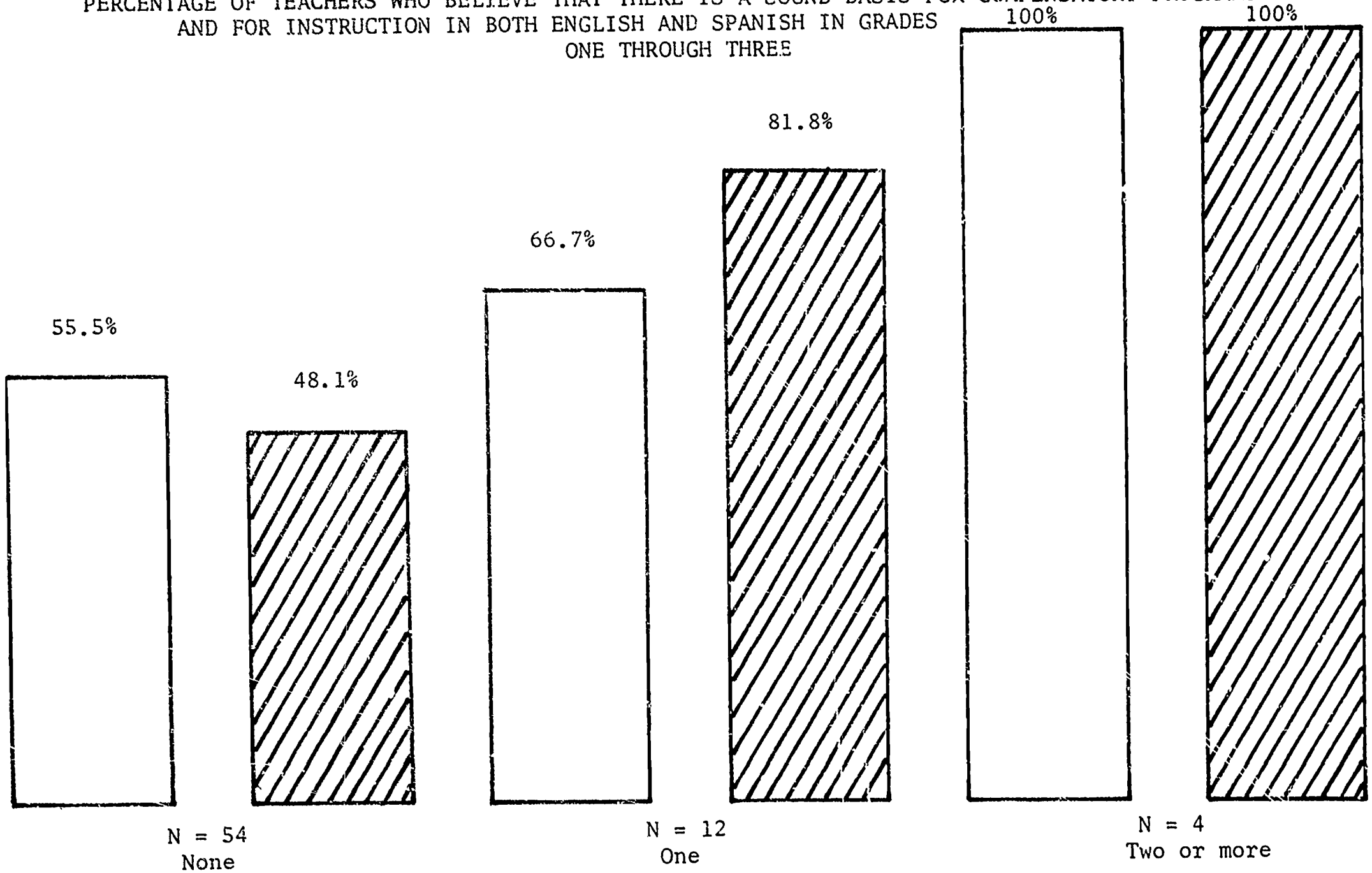
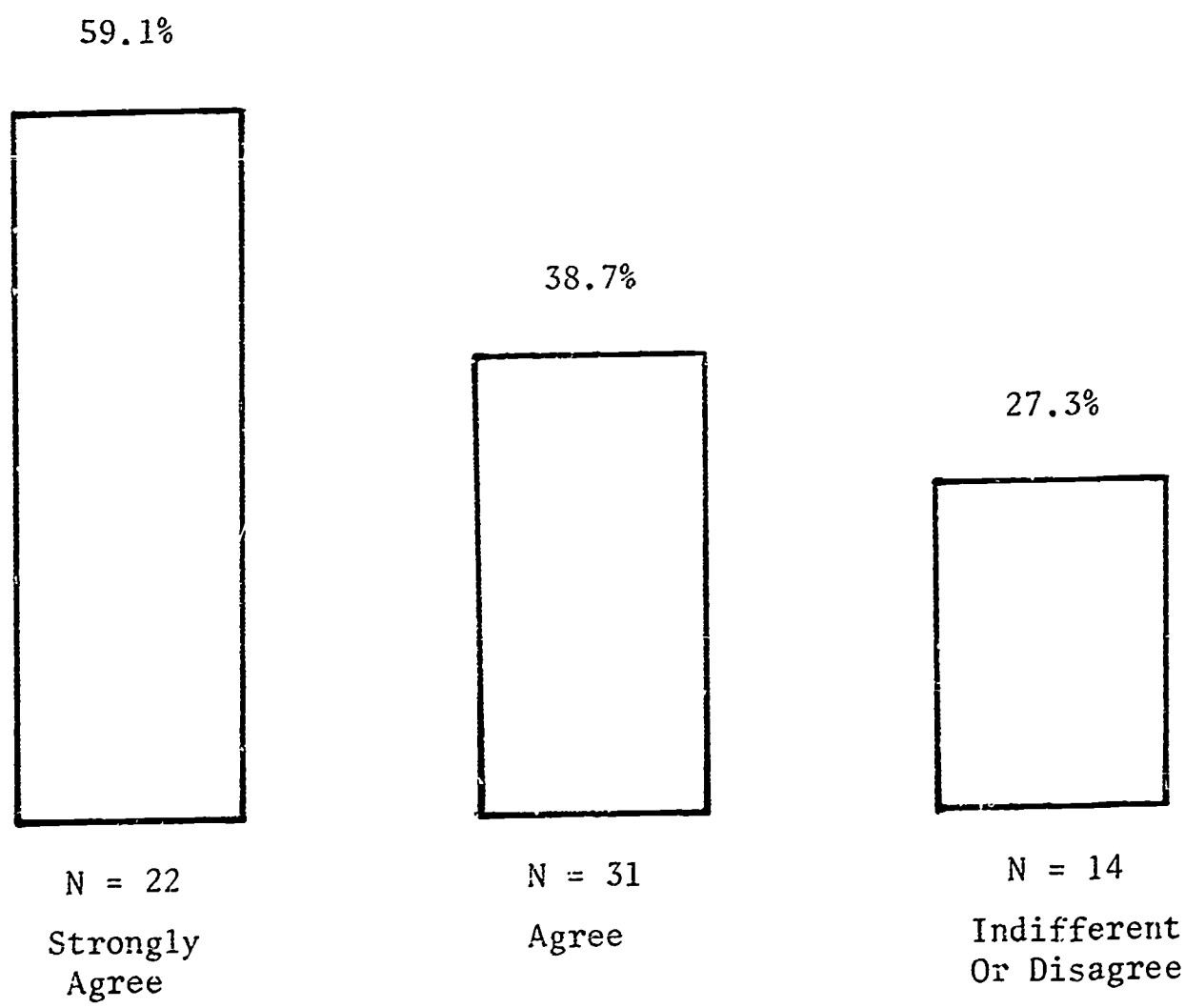


FIGURE 10

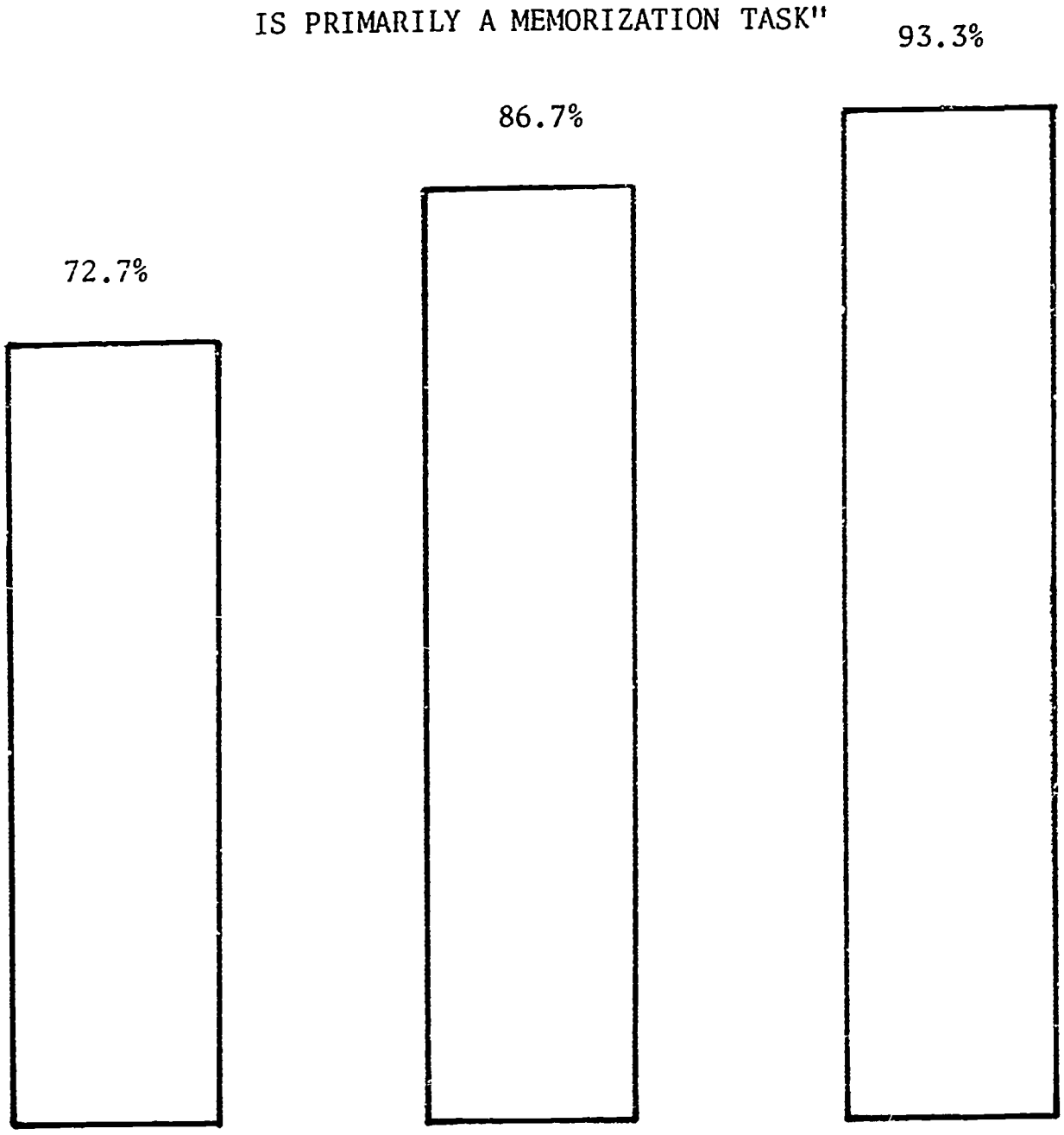
PERCENTAGE OF TEACHERS WHO DESIRE TO TEACH IN A SCHOOL THAT EMPHASIZES COLLEGE PREPARATION



Agreement With The Statement "I Certainly Hope That I Will Always Have The Opportunity To Teach Mathematics Throughout My Teaching Career"

FIGURE 11

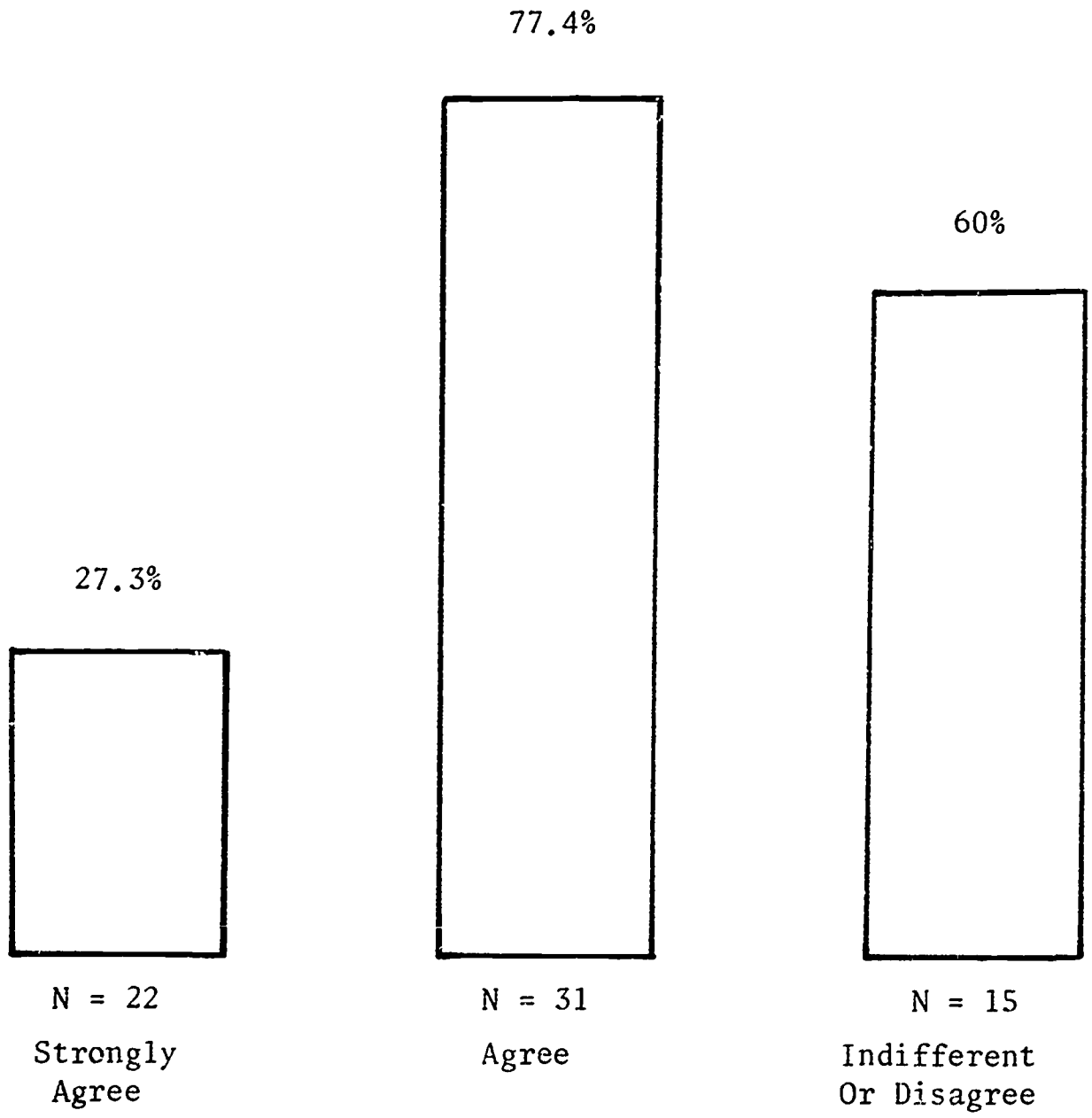
PERCENTAGE OF TEACHERS WHO DISAGREE
WITH THE STATEMENT "LEARNING MATHEMATICS
IS PRIMARILY A MEMORIZATION TASK"



Agreement With the Statement
"I Certainly Hope That I Will Always Have the Opportunity
To Teach Mathematics Throughout My Teaching Career"

FIGURE 12

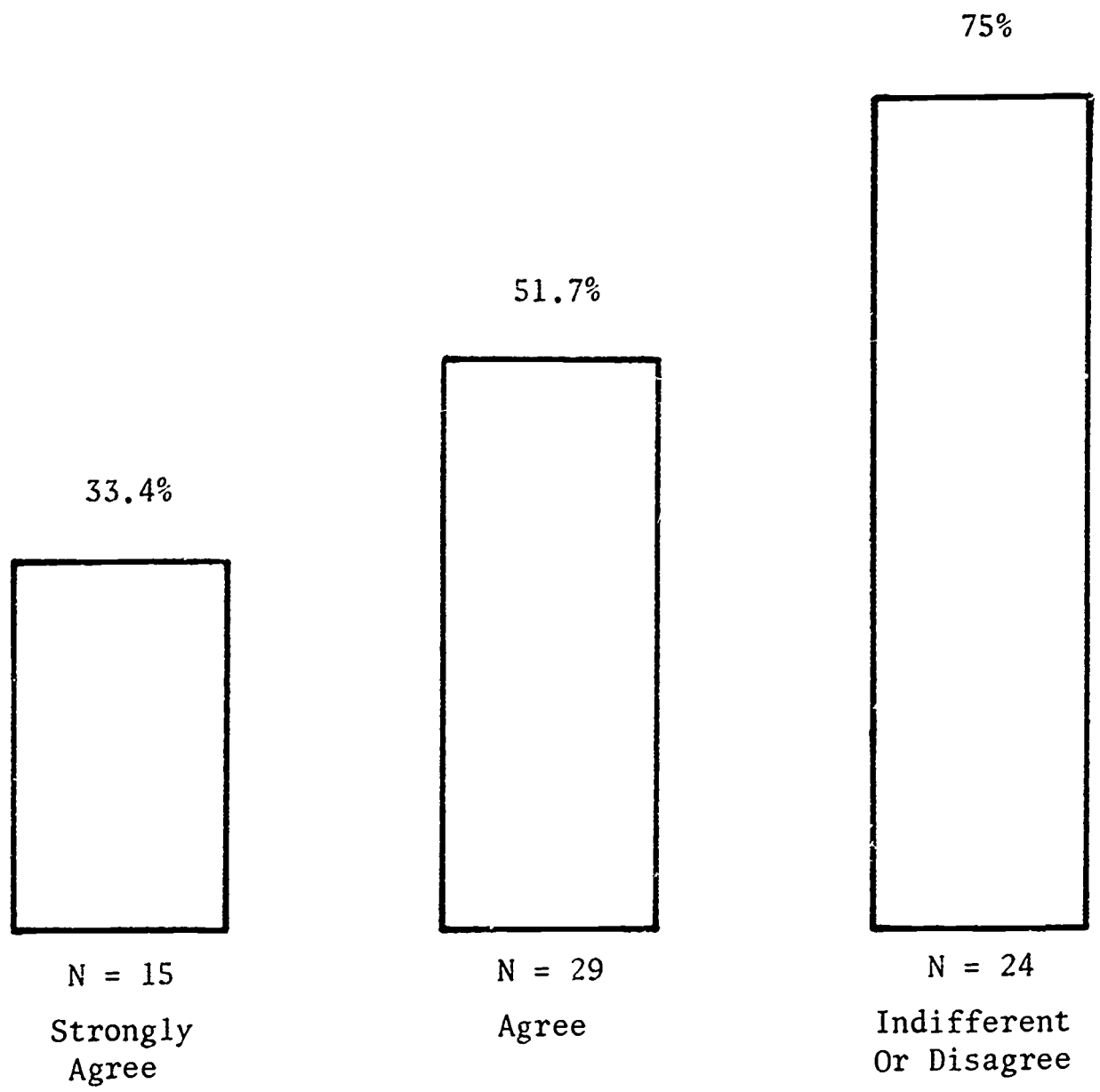
PERCENTAGE OF TEACHERS WHO DISAGREE
WITH THE STATEMENT "CONSTANT DRILL IS THE
WAY FOR THEM (STUDENTS) TO MASTER MATHEMATICS"



Agreement With The Statement
"I Certainly Hope That I Will Always Have The Opportunity
To Teach Mathematics Throughout My Teaching Career"

FIGURE 13

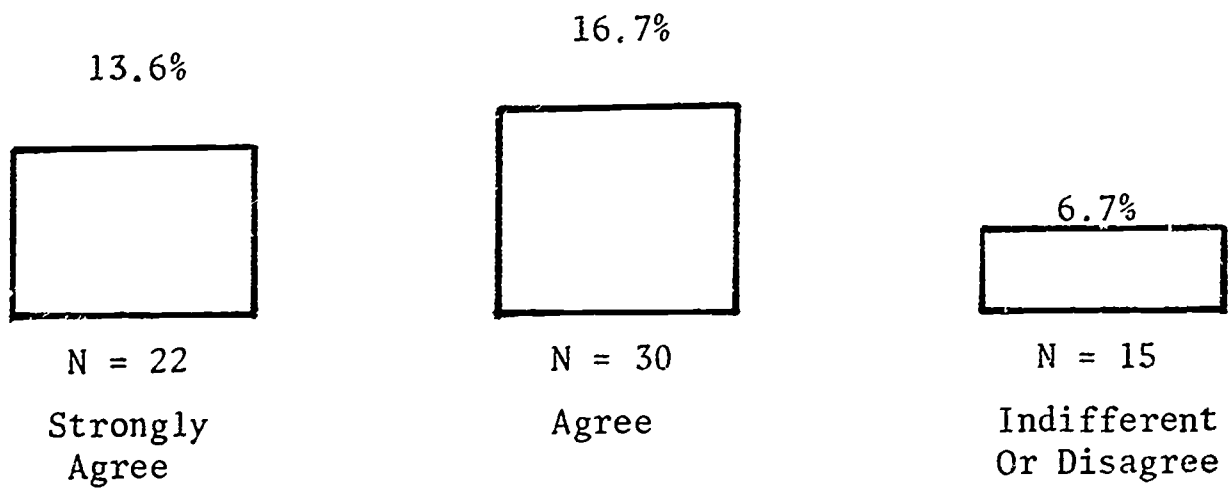
PERCENTAGE OF TEACHERS WHO SPEND TWO OR MORE HOURS OUTSIDE OF THE SCHEDULED SCHOOL DAY IN PREPARATION FOR TEACHING



Agreement With The Statement
"In Most Instances Reading A Book Of Fiction Is More Enjoyable For Me Than Reading A Book In The Field Of Mathematics"

FIGURE 14

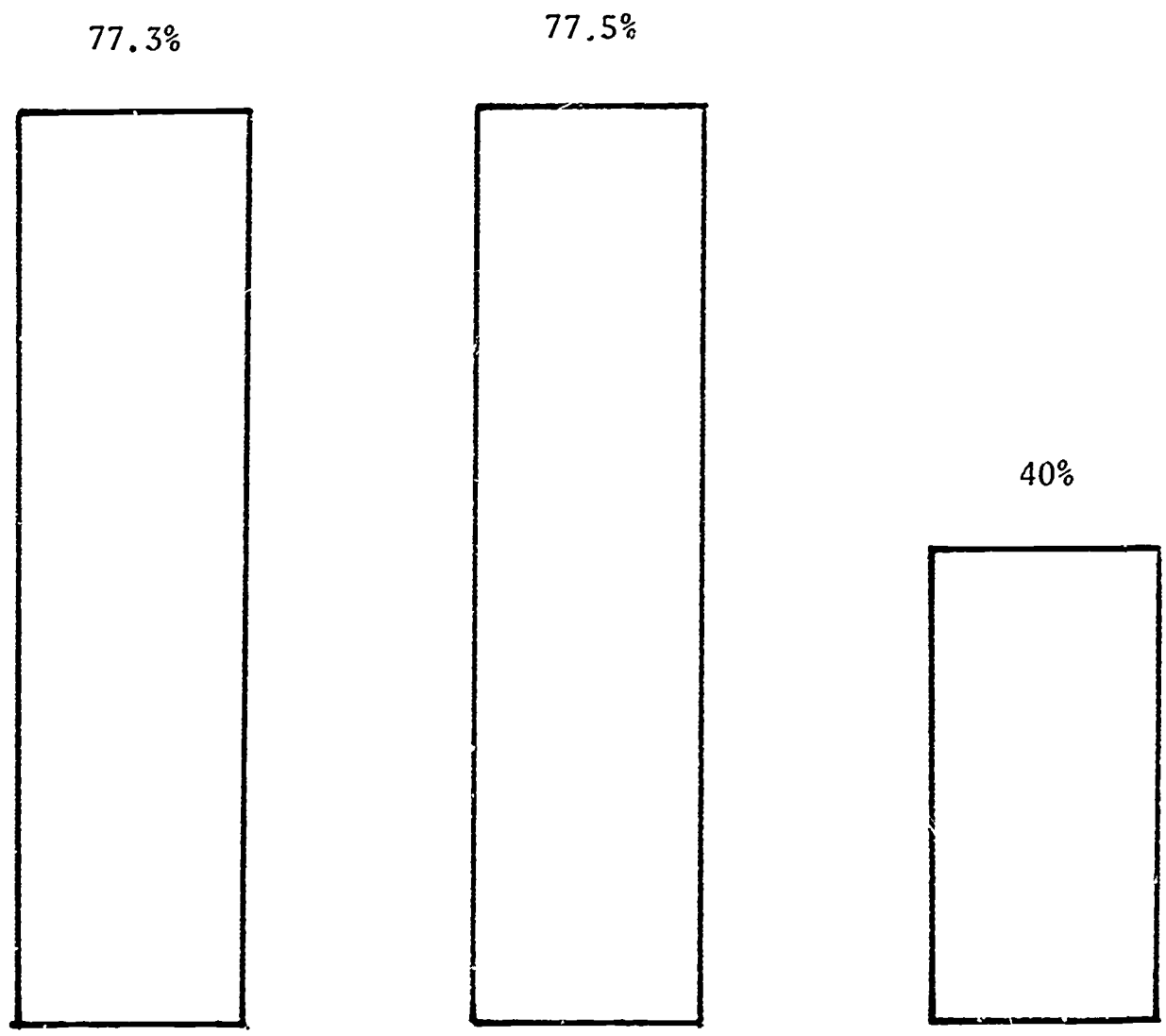
PERCENTAGE OF TEACHERS WHO MAKE
UP TESTS FOR DIFFERENT
GROUPS WITHIN THE SAME CLASSES



Agreement With The Statement
"I Certainly Hope That I Will Always Have The
Opportunity To Teach Mathematics Throughout My Teaching Career"

FIGURE 15

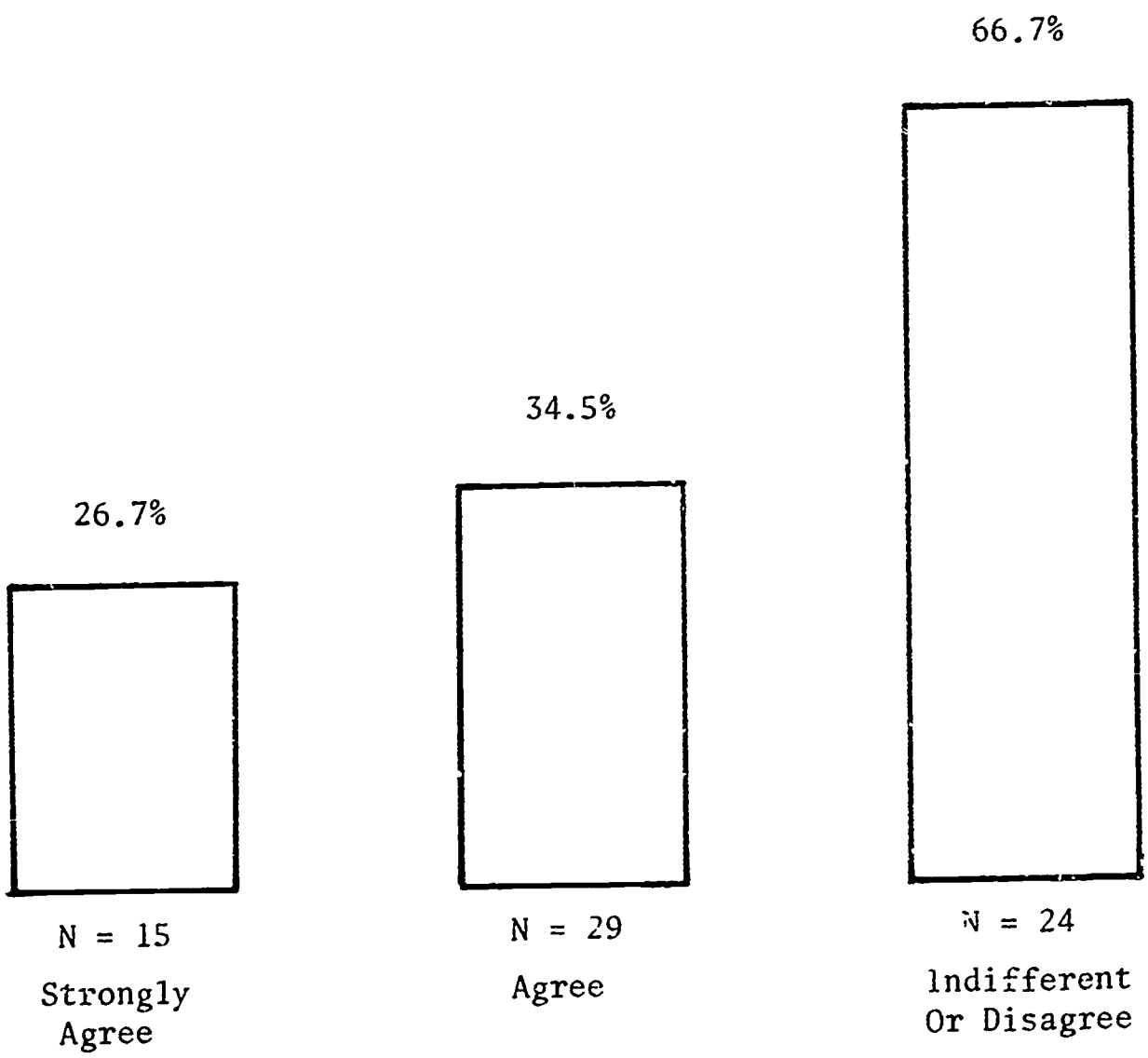
PERCENTAGE OF TEACHERS WHO AGREE WITH
THE STATEMENT "MOST PUPILS TRY TO DO
THEIR WORK TO THE BEST OF THEIR ABILITY"



Agreement With The Statement
"I Certainly Hope That I Will Always Have The
Opportunity To Teach Mathematics Throughout My Teaching Career"

FIGURE 16

PERCENTAGE OF STUDENTS WHO AGREE WITH THE STATEMENT "ANY CLASS IS CAPABLE OF GOVERNING ITSELF IF THE TEACHER WILL ALLOW IT TO DO SO"



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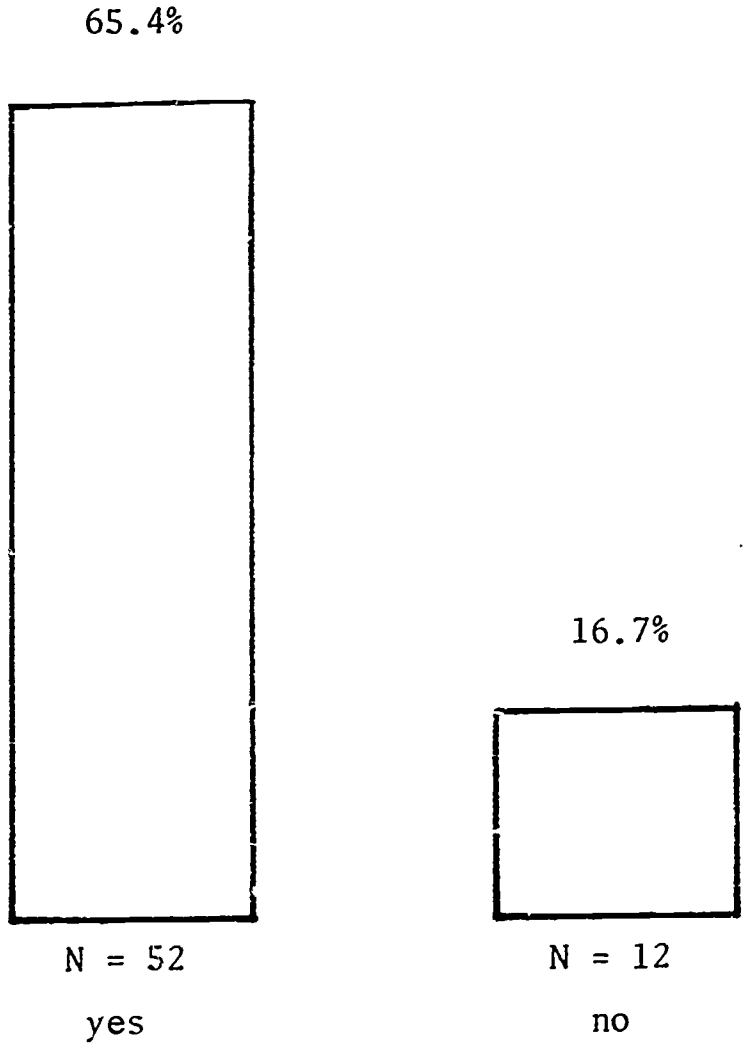
"In Most Instances Reading A Book Of Fiction Is More Enjoyable For Me Than Reading A Book In The Field Of Mathematics"

FIGURE 17

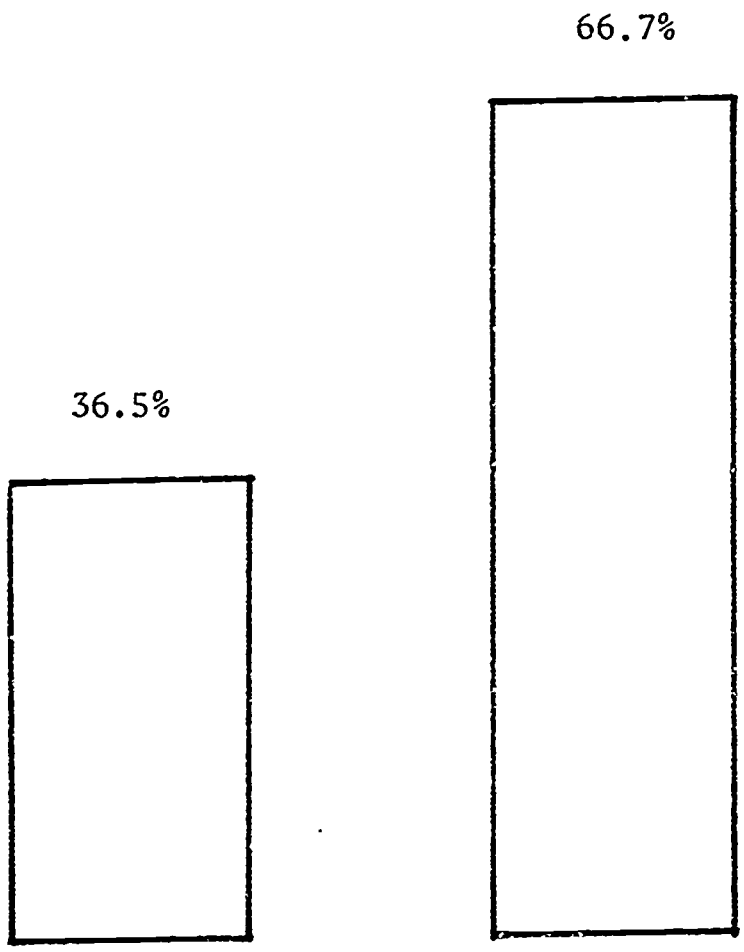
PERCENTAGE OF TEACHERS WHO BELIWVE THAT THERE IS A SOUND BASIS FOR OFFERING COMPENSATORY PROGRAMS FOR CULTURALLY DISADVANTAGED STUDENTS



Agreement With The Statement
"The Home Environment Of The Students Is Not Good"

FIGURE 18

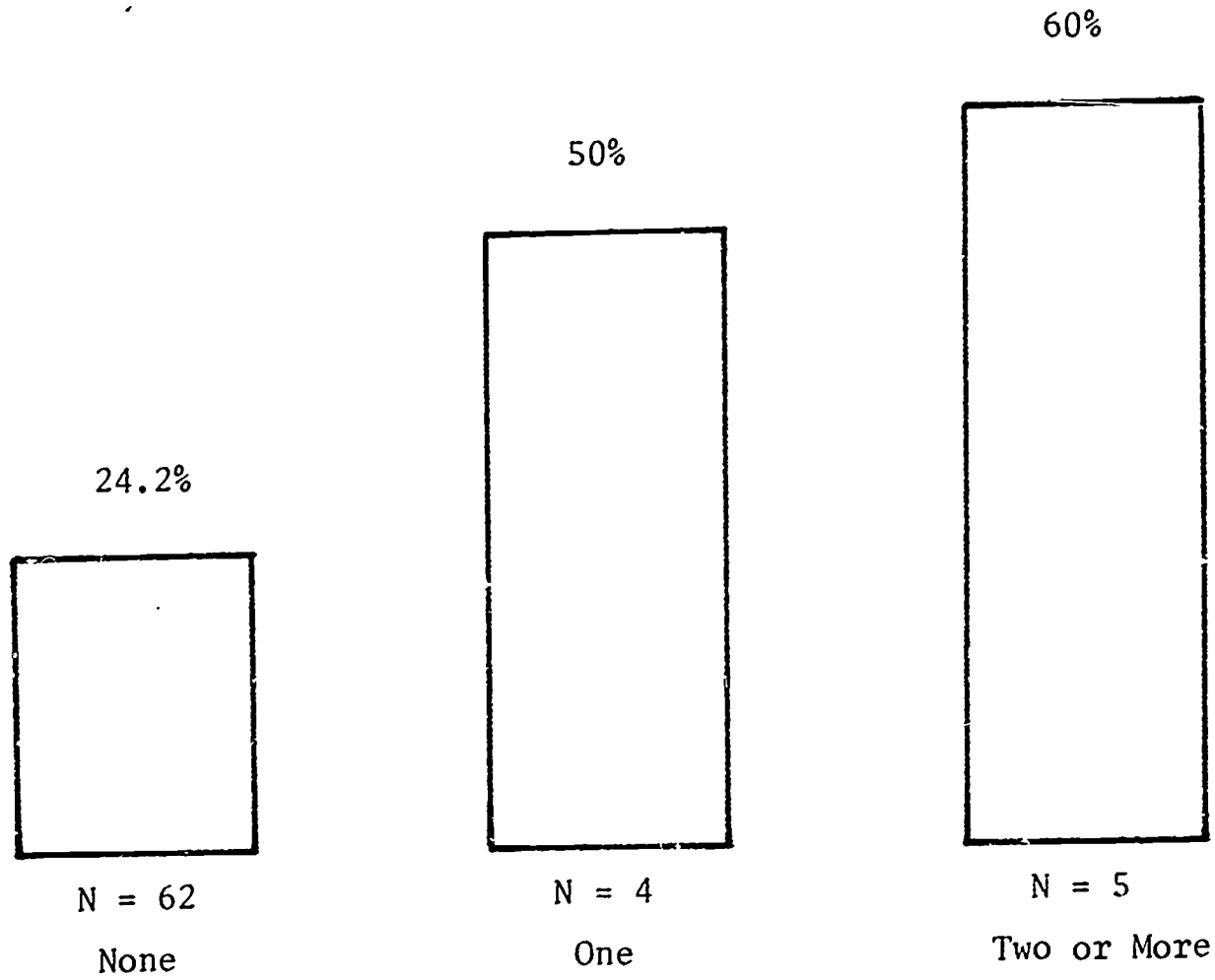
PERCENTAGE OF TEACHERS WHO DESIRE
TO TEACH IN A SCHOOL THAT
EMPHASIZES COLLEGE PREPARATION



Agreement With The Statement
"The Home Environment Of The Students Is Not Good"

FIGURE 19

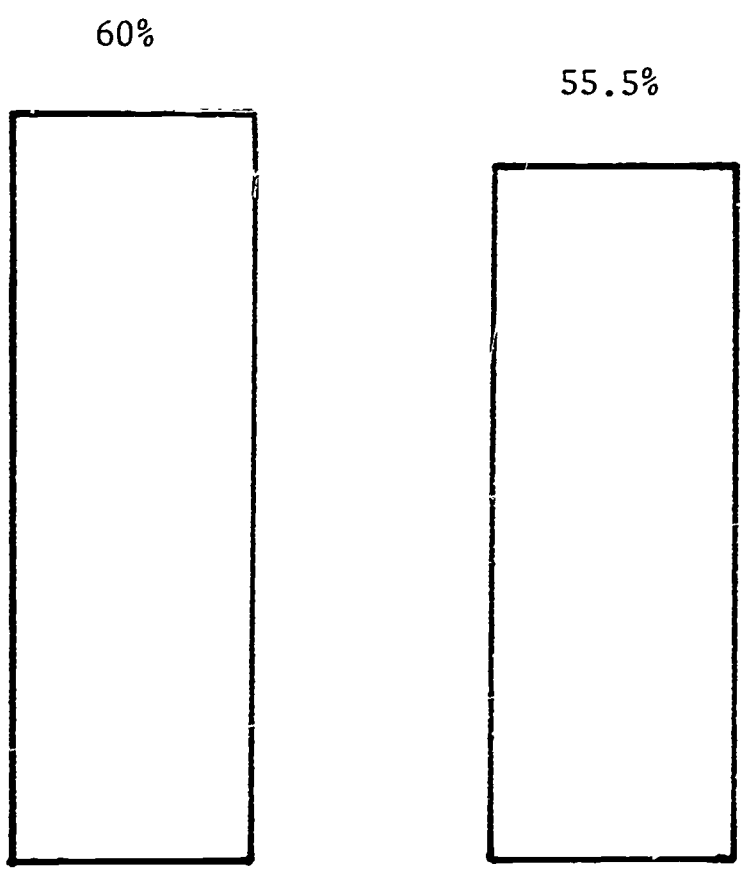
PERCENTAGE OF TEACHERS WHO DESIRE
TO TEACH HIGH ABILITY STUDENTS



Attendance At NSF or NDEA Summer Institutes

FIGURE 20

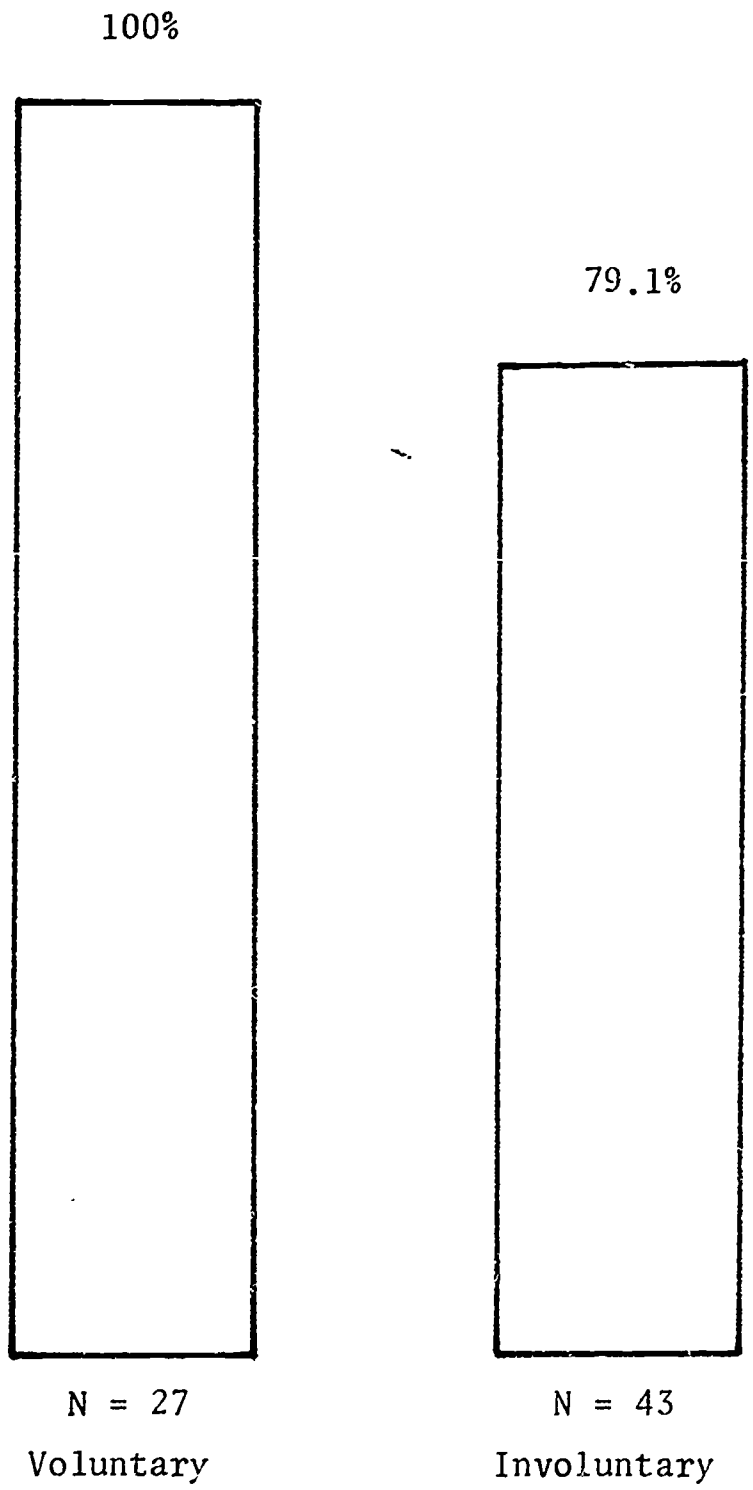
PERCENTAGE OF TEACHERS WHO BELIEVE THAT THERE IS A SOUND BASIS FOR PROVIDING INSTRUCTION IN BOTH SPANISH AND ENGLISH IN GRADES ONE THROUGH THREE



Attendance At NSF or NDEA Summer Institutes

FIGURE 21

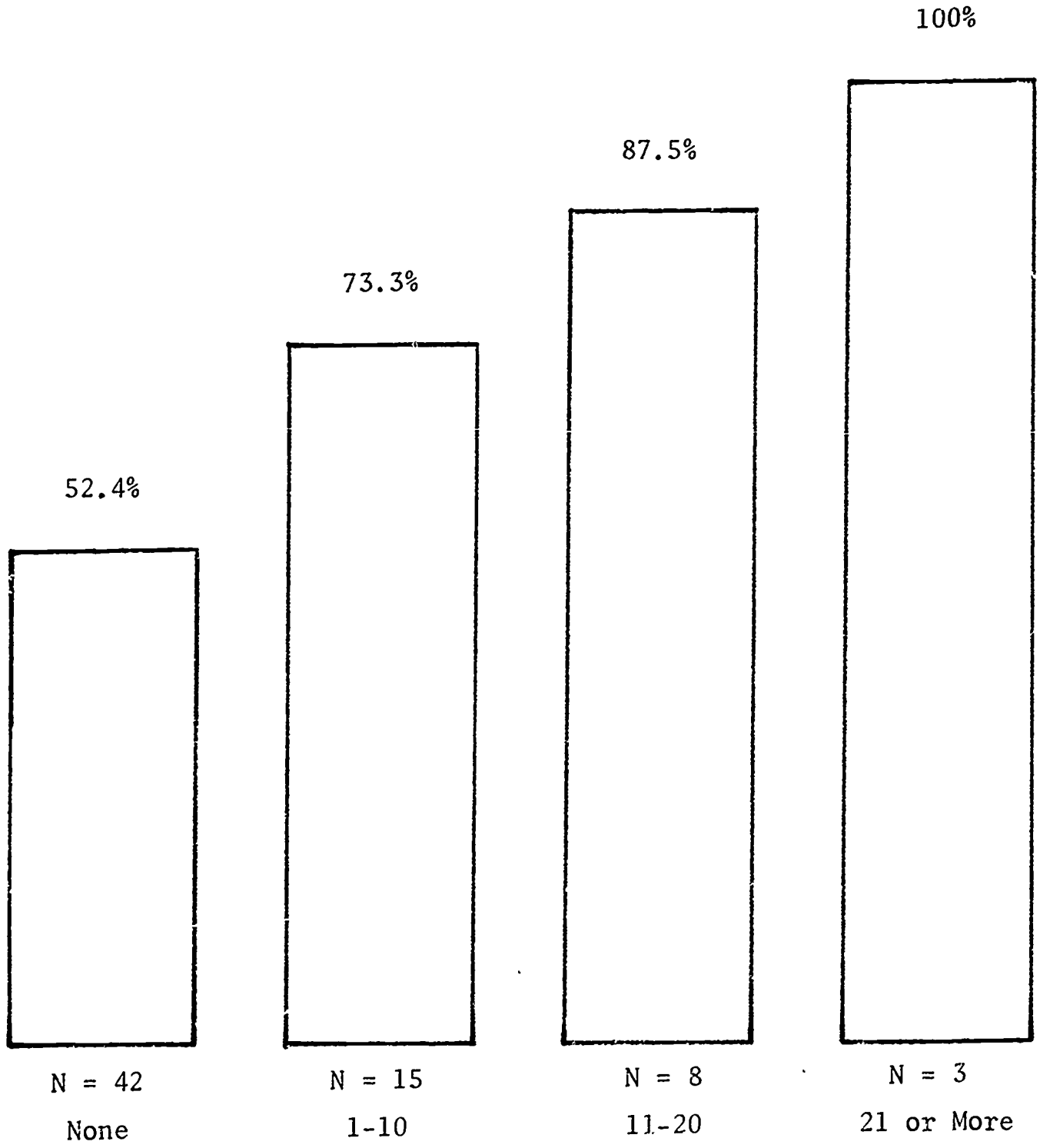
PERCENTAGE OF TEACHERS WHO AGREE WITH THE STATEMENT "MOST PARENTS ARE REASONABLE IN THEIR ATTITUDES TOWARD TEACHERS"



Teachers' School Assignment

FIGURE 22

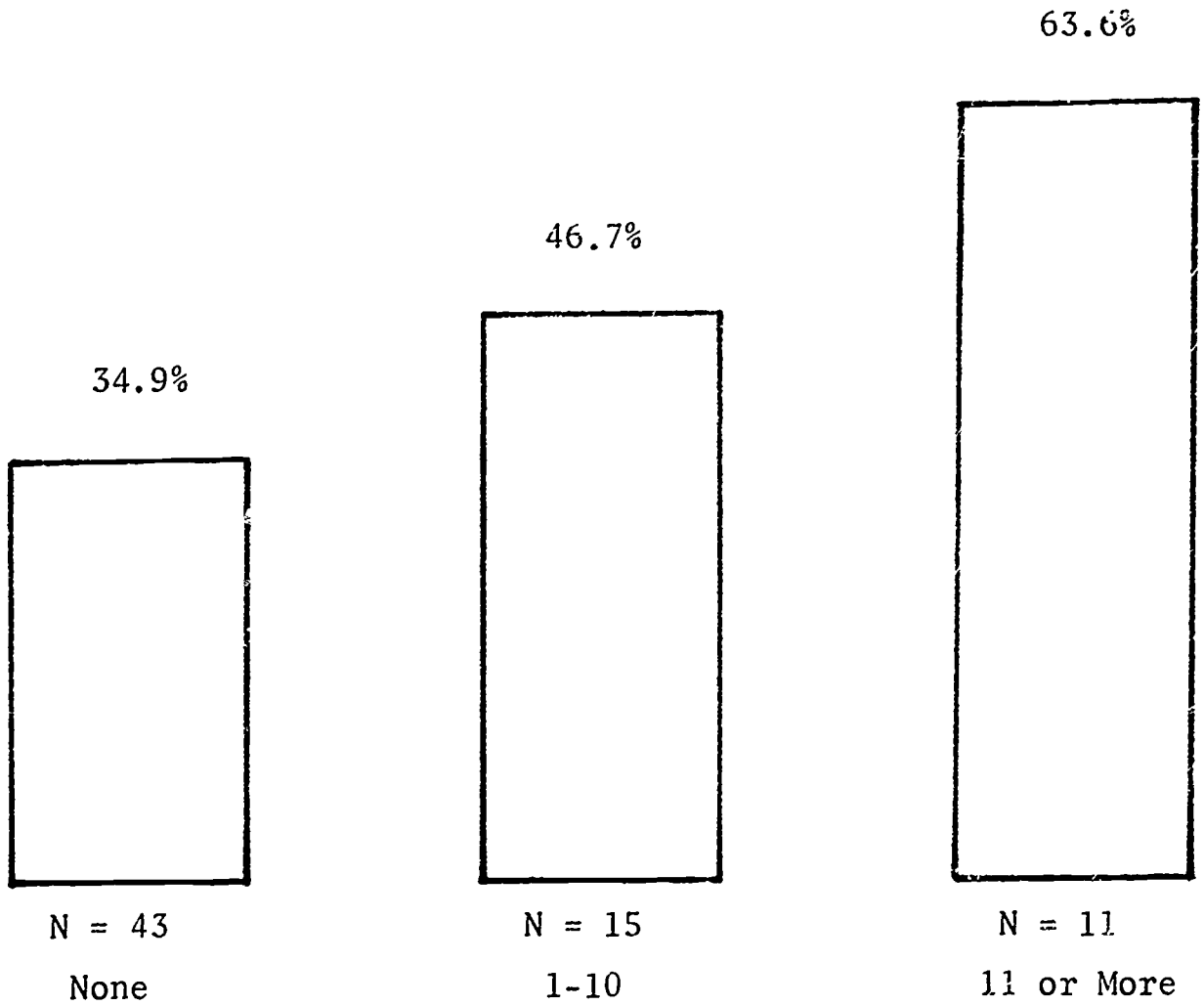
PERCENTAGE OF TEACHERS WHO FEEL THAT THE MOST SERIOUS FAILING A TEACHER COULD HAVE IS LACK OF MASTERY OF SUBJECT MATTER OR LACK OF ABILITY TO ORGANIZE WORK



Semester Hours In Mathematics Beyond The Bachelors Degree

FIGURE 23

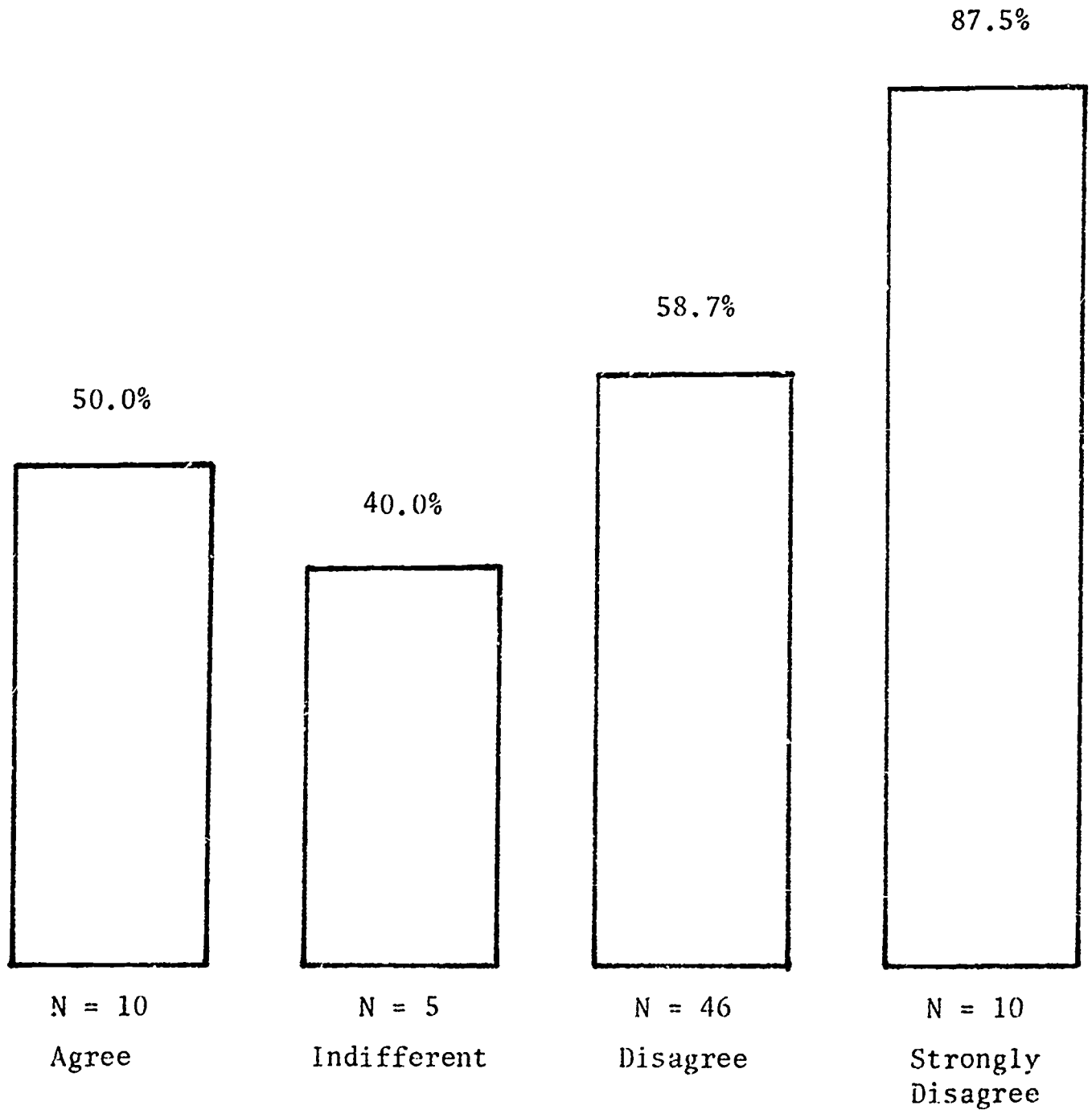
PERCENTAGE OF TEACHERS WHO ASSIGN AND HOLD ALL STUDENTS RESPONSIBLE FOR THE SAME HOMEWORK ASSIGNMENTS



Semester Hours in Mathematics Beyond The Bachelors Degree

FIGURE 24

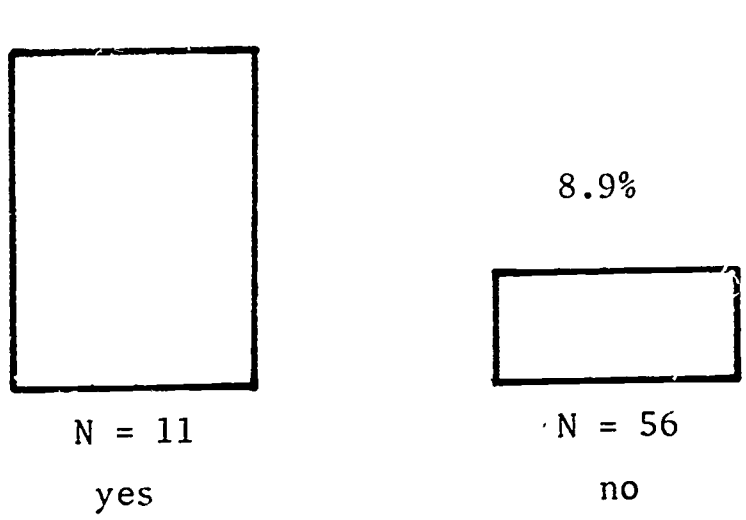
PERCENTAGE OF TEACHERS WHO BELIEVE THAT THERE IS A SOUND BASIS FOR PROVIDING INSTRUCTION IN BOTH SPANISH AND ENGLISH IN GRADES ONE THROUGH THREE



Agreement With The Statement
"A Teacher's Major Responsibility Is To Transmit Knowledge; He Should Avoid Dealing With Students' Psychological Difficulties"

FIGURE 25

PERCENTAGE OF TEACHERS WHO AGREE WITH
THE STATEMENT "LEARNING MATHEMATICS
IS PRIMARILY A MEMORIZATION TASK"



Agreement With The Statement
"The Different Races or Ethnic Groups
(In My School) Don't Get Along Together"

6093

Teacher Questionnaire
Southwestern Educational Development Laboratory
Mathematics Project

Note: Please Do Not Mark On This Sheet - Place All Responses On The Answer Sheet Provided.

YOU AND YOUR BACKGROUND

1. What is your sex:
   (A) Male
   (B) Female

2. How old were you on your last birthday?
   (A) Under 26
   (B) 26 to 35
   (C) 36 to 45
   (D) 46 to 55
   (E) 56 to 65
   (F) 66 or older

3. Where have you spent most of your life?
   (A) In this city, town, or county
   (B) In this state outside this city, town or county
   (C) In another state in the U. S.
   (D) In Mexico
   (E) In Canada
   (F) In a country other than the U. S., Canada, or Mexico

4. In what type of community have you spent most of your life? (Give your best estimate if you are not sure)
   (A) In the open country or in a farming community
   (B) In a small town (less than 10,000 people) that was not a suburb
   (C) Inside a medium size city (10,000 to 100,000 people)
   (D) In a suburb of a medium size city
   (E) Inside a large city (100,000 - 500,000 people)
   (F) In a suburb of a large city
   (G) In a very large city (over 500,000 people)
   (H) In a suburb of a very large city

5. Are you of Mexican-American or American-Indian background?
   (A) Mexican-American
   (B) American-Indian
   (C) Neither of these

6. Where did you graduate from high school?
   (A) A high school in this city, town, or county
   (B) A high school in this state, but outside this city, town or county
   (C) A high school in another state in the U. S.
   (D) A high school in another country

7. What job type does (did) your father have? You may not find his exact job listed, but check the group of jobs that looks like his.
   (A) Jobs Such As: cannery worker, janitor, general hospital employee, farm worker, window cleaner, garbage collector, or construction worker
   (B) Jobs Such As: fireman, autobody repairman, machanic, diemaker, welder, butcher, truck driver, or clerk in a department store, or bartender
   (C) Jobs Such As: bank teller, railroad conductor, shipping or warehouse clerk, draftsman, supervisor of maintenance, construction foreman, timekeeper, or traveling salesman
   (D) Jobs Such As: small store manager, credit manager, gas station owner, plumbing contractor, mortician, railroad dispatcher, deputy sheriff, army sergeant, ranch or farm owner
   (E) Jobs Such As: army major, doctor, teacher, pharamacist, or lawyer

8. How many years of school did your father complete?
   (A) Never went to school
   (B) Some grade school (from one to seven years)
   (C) Finished grade school (eighth grade)
   (D) Some high school (didn't graduate)
   (E) Graduated from high school
   (F) Some school beyond high school
   (G) Graduated from college
   (H) I don't know

9. How many years of school did your mother complete?
   (A) Never went to school
   (B) Some grade school (from one to seven years)
   (C) Finished grade school (eighth grade)
   (D) Some high school (didn't graduate)
   (E) Graduated from high school
   (F) Some school beyond high school
   (G) Graduated from college
   (H) I don't know

10. What is the highest earned college degree you hold? Do not report honorary degrees.
   (A) No degree
   (B) A degree or diploma based on less than 4 years work
   (C) A Bachelor's degree
   (D) A Master's degree
   (E) Professional or Specialist diploma (Sixth Year)
   (F) A Doctor's degree

11. What was the highest degree offered by that institution when you were an undergraduate student?
   (A) Certificate only
   (B) Bachelor's degree
   (C) Master's degree
   (D) Professional or specialist diploma (Sixth Year)
   (E) Doctor's degree

12. What is the location of that institution?
   (A) In this city, town, or county
   (B) In this state but outside this city, town, or county
   (C) In another state in the U. S.
   (D) In Mexico
   (E) In Canada
   (F) In a country other than the U. S., Canada, or Mexico

13. How many semester credits of college work have you had beyond your highest degree?
    (A) None
    (B) 1 to 2 semester hours
    (C) 3 or 4
    (D) 5 to 9
    (E) 10 to 14
    (F) 15 to 19
    (G) 20 to 29
    (H) 30 or more

14. As of June 1968, what will be the total number of years of full-time teaching experience you have? (Consider counseling as teaching experience)
    (A) 1 or 2
    (B) 3 or 4
    (C) 5 to 9
    (D) 10 to 14
    (E) 15 to 19
    (F) 20 to 29
    (G) 30 or more

15. As of June 1968, what will be the number of years of full-time teaching experience you had in this school? (Consider counseling as teaching experience)
    (A) 1 or 2
    (B) 3 or 4
    (C) 5 to 9
    (D) 10 to 14
    (E) 15 to 19
    (F) 20 to 29
    (G) 30 or more

16. Do you have a masters degree in mathematics?
    (A) Yes
    (B) No

17. How many semester hours above the bachelors degree do you have in mathematics?
    (A) None
    (B) 1 to 10 semester hours
    (C) 11 to 20 semester hours
    (D) 21 or more semester hours

18. What type of state teaching certification do you have?
    (A) Noncertified
    (B) Temporary, provisional, or emergency certification
    (C) Regular certification but less than the highest certification in this state
    (D) The highest certification offered in the state (normally life, permanent or long-term)

19. How did you happen to be assigned to this particular school rather than some other school in this district?
    (A) I asked to work in this school
    (B) I was placed in this school

20. Have you ever attended any summer institutes such as those sponsored by the National Science Foundation, by the National Defense Education Act or by the 1965 Elementary - Secondary Education Act?
    (A) None
    (B) 1
    (C) 2 or 3
    (D) 4 or more

21. Have you ever attended any summer institutes or comparable training programs that offer special training in teaching or counseling the culturally disadvantaged?
    (A) No
    (B) Yes, 1
    (C) Yes, 2 or more

22. What is your employment status in this school system?
    (A) I am on a tenured appointment
    (B) I have a regular full-time appointment but not on tenure
    (C) I am a substitute teacher on temporary assignment

23. Are you a member of any national honorary society such as Kappa Delta Pi or Phi Beta Kappa?
    (A) Yes
    (B) No

24. Suppose you could go back in time and start college again; in view of your present knowledge, would you enter the teaching profession?
    (A) Definitely yes
    (B) Probably yes
    (C) Undecided
    (D) Probably no
    (E) Definitely no

25. Are you a member of any teachers' associations?
    (A) No
    (B) Yes, an officer
    (C) Yes, an active worker
    (D) Yes, a member but not an active worker

26. Do you read regularly any national educational or subject matter journals such as the NEA Journal, The Nation's Schools, The Arithmetic Teacher, etc?
    (A) No, not regularly
    (B) Yes, 1 regularly
    (C) Yes, 2 regularly
    (D) Yes, 3 or more regularly

27. At which grade level are you teaching this year?
    (A) Primary (Grades 1-3)
    (B) Intermediate (Grades 4-7)
    (C) High School (Grades 8-12)

28. What was your major field of study in your undergraduate school? If you have two majors, mark the one in which you took the most work.
    (A) Physical Education, Driver Education
    (B) Elementary Education
    (C) English - Journalism, Foreign Language
    (D) Mathematics
    (E) Biological or Physical Sciences
    (F) Industrial Arts, Home Economics, Vocational Education, or Agriculture
    (G) Music - Art
    (H) Social Science including History
    (I) Other

29. Have you ever attended any summer institutes or in-service training programs that offered special training in mathematics education during the past five years?
    (A) No
    (B) Yes, 1
    (C) Yes, 2 or more

30. Do you speak Spanish?
    (A) No
    (B) Yes, but I do not have a conversational ability
    (C) Yes, I have a conversational ability

31. At the undergraduate level how may semester hours did you successfully complete in mathematics?
    (A) None
    (B) 1 to 9
    (C) 10 to 19
    (D) 20 to 29
    (E) 30 or more

32. What do you expect to be doing five years from now?
    (A) Teaching in this school
    (B) Teaching in some other school
    (C) School Administration
    (D) School Counseling
    (E) College teaching
    (F) A job outside the field of education

YOU AND SCHOOL

33. If you could choose, would you be a faculty member in some school other than this one?
    (A) Yes
    (B) Maybe
    (C) No

34. What kind of high school would you most like to work in? (Answer even if you are not a high school teacher)
    (A) An academic school with strong emphasis on college preparation
    (B) A comprehensive school
    (C) A special curriculum school that is designed to serve the culturally disadvantaged
    (D) Vocation, technical or trade school
    (E) Commercial or business school

35. If you could take your choice of school settings, which would you select from among the following?
    (A) All children of professional and white-collar workers
    (B) Mostly children of professional and white-collar workers
    (C) Children from a general cross section of the community
    (D) Mostly children of factory and other blue-collar workers
    (E) All children of factory and other blue-collar workers
    (F) Children of rural families
    (G) I have no preference

36. What kind of school do you prefer to work in; as far as ethnic composition is concerned?
    (A) A school with predominantly Anglo Saxon students
    (B) A school with a mixture of Anglo Saxons and minority ethnic groups
    (C) A school with predominantly minority ethnic groups
    (D) I have no preference

37. What type of class do you most like to teach?
    (A) A high ability group
    (B) An average ability group
    (C) A low ability group
    (D) A mixed ability group
    (E) I have no preference

38. In your judgement, what is the general reputation of this school among teachers outside the school?
    (A) Among the best
    (B) Better than average
    (C) About average
    (D) Below average
    (E) A poor school
    (F) I don't know

39. Do you believe there is a sound basis in educational policy for giving compensatory programs to culturally disadvantaged students at extra per-pupil cost?
    (A) Yes
    (B) No
    (C) Undecided

40. About how many hours a day do you spend outside of your scheduled work day in preparation for teaching?
    (A) None
    (B) 1
    (C) 2
    (D) 3
    (E) 4 or more

41. If you could choose only between these two kinds of students, which would you rather teach?
    (A) A student with average ability whose parents have given him a strong interest in school achievement
    (B) A student with high ability whose parents have not given him any interest in school achievement.

42. Do you believe there is a sound basis in educational policy for providing instruction in both Spanish and English in grades one through three?
    (A) Yes
    (B) No
    (C) Undecided

43. Overall, how would you rate students in your school on how hard they try in school?
    (A) Excellent
    (B) Good
    (C) Average
    (D) Fair
    (E) Poor

44. Overall, how would you rate the academic ability level of the students in this school?
    (A) Excellent
    (B) Good
    (C) Average
    (D) Fair
    (E) Poor

45. Relative to decision making in your mathematics or arithmetic classes which one of the following statements best describes your feelings?
    (A) I follow the text and supplement it with additional material
    (B) I develop my own course of study and supplement my decision with the text
    (C) I didn't have a textbook so that I might utilize other material more
    (D) I follow the book and use the suggestions in the manual so that I know I am teaching what needs to be taught.

46. From your experience what subject in the following list is the hardest for students to learn?
    (A) History - Social Science
    (B) English - Reading
    (C) Mathematics
    (D) Science

47. In your mathematics classes are you basing any of your teaching on what is commonly called "modern mathematics"?
    (A) No
    (B) Yes, to some extent
    (C) Yes, most of my teaching

48. Which of the following do you consider the most serious failing a teacher chould have?
    (A) A severe aloof manner with students
    (B) Lack of mastery in subject matter
    (C) Lack of ability to organize his/her work

49. Which of the following statements best reflects your homework policy in your mathematics (arithmetic) classes?
    (A) I don't have homework assignments
    (B) I allow each student to choose his own homework assignment
    (C) I assign homework to groups on the basis of interest and ability
    (D) I assign and hold all students responsible for the same homework assignment

50. Which of the following statements best reflects your policy on testing students in your mathematics (arithmetic) classes?
    (A) I generally use test prepared by specialists, for example those that correlate with the text
    (B) I generally use standardized test
    (C) I make-up tests for use by all students
    (D) I make-up tests for different groups within the same classes

WHAT DO YOU THINK

51. How do you react to the following statement: "Any class is capable of governing itself sensibly if the teacher will allow it to do so."
    (A) Strongly disagree
    (B) Disagree
    (C) Indifferent
    (D) Agree
    (E) Strongly agree

52. With respect to your experience with children, what do you think of the following statement: "Most pupils try to do their work to the best of their ability."
    (A) Strongly disagree
    (B) Disagree
    (C) Indifferent
    (D) Agree
    (E) Strongly agree

53. With respect to your experience with parents what do you think of the following statement: "Most parents are reasonable in their attitudes toward teachers."
    (A) Strongly disagree
    (B) Disagree
    (C) Indifferent
    (D) Agree
    (E) Strongly agree

54. Learning mathematics is primarily a memorization task.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

55. Considering the amount of effort they require, courses in advanced mathematics in college and graduate school are of relatively little use to the teacher of arithmetic in elementary school. (All teachers should answer)
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

56. Whether students enjoy it or not, constant drill is the way for them to master mathematics.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

57. A teacher's major responsibility is to transmit knowledge; he should avoid dealing with students' psychological difficulties.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

58. The emphasis in mathematics should be on accuracy.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

59. I certainly hope that I will always have the opportunity to teach mathematics throughout my teaching career.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

60. In most instances reading a book of fiction is more enjoyable for me than reading a book in the field of mathematics.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

61. Frankly, once in awhile the field of mathematics is not as interesting to me as I would like.
    (A) Strongly agree
    (B) Agree
    (C) Indifferent
    (D) Disagree
    (E) Strongly disagree

62. During my high school days my general attitude toward mathematics was: (Check the most appropriate statement).
    (A) I liked it and took more mathematics than was necessary
    (B) I didn't really dislike it, but I didn't go out of my way to take mathematics as an elective
    (C) I didn't like mathematics particularly, and took as few courses as possible

63. During my ~~high school~~ college days my general attitude toward mathematics was: (Check the most appropriate statement).
    (A) I liked it and took more mathematics than was necessary
    (B) I didn't really dislike it, but I didn't go out of my way to take mathematics as an elective
    (C) I didn't like mathematics particularly, and I avoided mathematics courses.

The following questions relate to things that surveys report teachers believe reduce the effectiveness of the teacher in the classroom. Mark yes for those that are a problem in your school and no for those that are not problems.

64. The home environment of the students is not good.
    (A) Yes
    (B) No

65. The different races or ethnic groups don't get along together.
    (A) Yes
    (B) No

66. Parents attempt to interfere with the school.
    (A) Yes
    (B) No

67. There should be a better mixture, the students are all too much of one type.
    (A) Yes
    (B) No

68. The student's aren't really interested in learning.
    (A) Yes
    (B) No

69. There is too much student turn-over.
    (A) Yes
    (B) No

70. The parents don't take enough interest in their children's school work.
    (A) Yes
    (B) No