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ABSTRACT

Data presented in this study of the Academic Interest Measures (AIM) include score distributions for a national sample of high school juniors grouped by sex, ability, and curriculum (effects of socioeconomic status were found to be negligible); relationships between AIM and many other variables, such as ability test scores, students' ratings of their own interests, definiteness of occupational plans, years of post-secondary education planned, scores on information scales, and participation in nonclassroom activities; scale intercorrelations and factor analyses; internal consistency of scores and stability over periods of time. The psychometric properties of AIM and evidence for its construct validity suggest that it may be useful as a criterion measure. A self-scoring form of AIM is appended. For Grade 11 norms for AIM, see TM 000 671. (Author/AG)

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THE MEASUREMENT OF ACADEMIC INTERESTS

Part I. Characteristics of the Academic Interest Measures

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AUTHORS' NOTE

Gerald Halpern initiated the PSAT-AIM study and directed it through the 11th-grade test administration, scoring, and construction of the first set of norms tables before he left ETS. He must be absolved of responsibility for this report, however, having had no chance to participate in the writing.

Lila Norris provided continuity for the project, working with Halpern in its early stages and seeing it through to conclusion.

Martin Katz directed the study after Halpern's departure and collaborated with Mrs. Norris in writing this report.

Acknowledgement is made to Paul Diederich and Robert Linn, who reviewed the draft of this report and made many helpful suggestions.

THE MEASUREMENT OF ACADEMIC INTERESTS

Part I. Characteristics of the Academic Interest Measures

Abstract

Data presented in this study of the Academic Interest Measures (AIM) include score distributions for a national sample of high school juniors (N = 15,500), grouped by sex, ability, and curriculum (effects of socio-economic status were found to be negligible); relationships between AIM and many other variables, such as ability test scores, students' ratings of their own interests, definiteness of occupational plans, years of post-secondary education planned, scores on information scales, and participation in nonclassroom activities; scale intercorrelations and factor analyses; internal consistency of scores and stability over periods of time.

The psychometric properties of AIM and evidence for its construct validity suggest that it may be useful as a criterion measure.

Data on predictive validities will appear in Part II.

Appendix D, consisting of the norms tables, is separately bound. Appendix E is a self-scoring form of AIM, devised by Paul B. Diederich.

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THE MEASUREMENT OF ACADEMIC INTERESTS

Part I. Characteristics of the Academic Interest Measures

INTRODUCTION TO THE ACADEMIC INTEREST MEASURES

In the course of the eight-year Study (Smith and Tyler, 1942), an Interest Index was developed to serve as a measure of the effects of secondary school curricula on students' interests. The modification of this Index, constructed primarily as a criterion measure, and the successive revisions whereby it became the Academic Interest Measures (AIM), intended mainly for use in guidance, are briefly summarized in this introduction to an extensive study of the measurement of academic interests.

It has been widely believed that interests have or should have some effect on the career decisions made by students during late adolescence. Interests are generally conceptualized as an important component of motivation. They are hypothesized to have a significant effect on a student's decisions--for example, choice of a field--and on the outcomes of his decisions--for example, quality or level of achievement, expressed satisfaction, and persistence in a field. The student's knowledge of his own interests and of their relationship to such criteria, then, is presumed to be useful in the process of informed and rational decision-making.

The number and complexity of options available to students in secondary schools and colleges appear to make adequate first-hand experience in each option difficult to come by. Standardized interest measures, therefore, have been developed to serve as a relatively brief and efficient substitute for such "real-life" exploration of options. They are expected to add relevant information to what the student already knows about his interests. This information may take various forms. It may help the student to "discover" interests previously unrecognized--perhaps by extending his knowledge of options or of activities associated with an option. It may help him to perceive a new and more useful structure for his interests,

perhaps by classifying and organizing his responses to items along dimensions that are particularly relevant for the choices that confront him. It may provide him with direct interpretations, perhaps transforming his scores on the instrument into some index of resemblance (in conjunction with other data) to a relevant reference group, or of probability of attaining a given level of success, satisfaction, or persistence.

Thus, interest measures may be characterized by their purpose, content, response form, scoring procedures, classification and structure of scales, and interpretive data. AIM will be described along these lines in the general context of interest measurement.

Content

The items in AIM are mainly straightforward descriptions of activities that purport to represent various school subject fields. The original items for the Interest Index had been gathered through an examination of textbooks, extensive observations and analyses of classroom activities, and diaries of high school students. From some 600 items, 300 were then chosen and edited so that each item represented a unit of behavior primarily related to a single area. The 300 items were tried out in a number of schools; items that were retained had high correlations with total scores in their respective fields and were neither too popular nor unpopular to be discriminating. Some revisions were made in an attempt to make sure that each area was adequately sampled and that items were clear to students.

In the Comparative Prediction Study (French, 1963), half-length scales from the Interest Index (100 items in all) were administered to about 4800 freshmen in eight colleges. French (1964a) describes how a validity rank was computed for each item on three criteria available four years later for many of these students: achievement in freshman courses, satisfaction with major field in the senior

year, and mean score (popularity) among students enrolled in each major field. It should be noted, however, that items ranking high on one of those three criteria did not necessarily rank high on the other two. Most of the items seemed to be much more clearly associated with major field membership than with grades or satisfaction. This phenomenon suggests that prediction of different criteria probably requires different content. All-purpose predictive effectiveness is rare. Indeed, the correlations between appropriate scales and the criteria of grades and satisfaction were quite low. In general, interest inventories seem to be much more successful in predicting "the direction men will go" (Strong, 1958) than in predicting how well a person will do.

French (1964b) revised the items not found differentially valid for an appropriate field by at least one of the three criteria, edited other Index items to bring them up to date, and used the characteristics of valid items as a guide for writing 93 additional items. The total pool of 200 items from the Interest Index and 93 new items were then administered to 360 11th-grade students. On the basis of item-scale correlations (very few were below .60) and representation of the full scope of each field, 16 items were selected for each of 12 scales.

Further refinement was made by Halpern (1967), who administered the revised Index to some 2000 11th-grade students in five school systems and then replaced 4 of the 192 items that did not correlate at least as high with their assigned scales as with other scales. At this point, the name of the inventory was changed to Academic Interest Measures. The content of AIM items may be said, in short, to have been determined largely by consideration of adequate representation of a subject field, differential predictive validity for college courses, and homogeneity of each scale.

The items describe activities associated with each subject field that seem to be molar rather than atomistic--that is, they incorporate a cluster or series of actions rather than a single act. Typical items are "To put eggs into an

incubator and open one every day to see how the chick develops," "To read about new advances in mathematics," "To write articles for the school newspaper." These illustrate both the level and variation in specificity of AIM items: the first specifies more detail than the second. The AIM items are perhaps most closely comparable in degree and range of specificity (though not in substance) to the descriptions of work activities that characterize most of the items in the Occupational Interest Inventory (California Test Bureau, 1956) and many of the items in the Kuder Preference Record-Vocational (Science Research Associates, 1962), especially those that start with transitive verbs, and in Part IV of the Strong Vocational Interest Blank (Stanford University Press, 1966). The AIM items seem considerably more specific than the listing of occupational titles and school subjects in Parts I and II of the SVIB, or in those KPR-V items such as "Be a chemist," "Be a salesman," "Be a bookkeeper."

On the other hand, they may be considered less specific than items in pictorial interest inventories, such as the Geist Picture Interest Inventory (Western Psychological Services, 1964). Pictures often have a "stop-action" effect that may convey a single act--perhaps sometimes only a fragment of an act--at a given moment.

In inventories that are not empirically keyed, specificity is an important issue. If only a fragment of an activity is presented, the student's response may apply only to the surface of the fragment shown rather than to the molar activity that it presumably represents. But if, at the other extreme, an item is as generalized as an occupational title or the name of a subject field, one must assume that the student already knows his preference or liking for this occupation or field in order to respond in a stable or meaningful way. When indeed he does know his preference for such items, what new information does the inventory give him? And when he does not, he may feel like saying--with some justified exasperation--"But that's why I'm taking the inventory--to find out

whether I'd be interested in this occupation or field." In such a case, he is being asked to invest the very coin he hopes to earn.

Although the AIM items avoid the two extremes of detail and generality, an important question is whether they provide adequate representation of each subject field for students who have had insufficient opportunity to explore that field. (Perhaps simulated work samples could offer the student a more effective sense of the real thing. But could such work samples be "miniaturized" enough to compare with a 16-item inventory, without too severe a loss in verisimilitude and scope?) At any rate, we raise these questions about item content here to indicate the rationale for many of the analyses reported in the following pages, in which we try to bracket the content of AIM through a series of comparisons with many other variables--abilities, information, nonclassroom activities, occupational plans, and so on. Particularly relevant to the issue of specificity vs. generality are comparisons between AIM scales and ratings made by students in response to a single question about their own interest in each field or subject.

Response Mode and Scoring

The student's response to each item--Like, Indifferent, or Dislike--is independent of responses to other items. This procedure contrasts with the forced choice format that is used by several interest inventories (most notably the KPR-V) to avoid the effects of positive or negative response set. As has been explained extensively (Bauernfeind, 1963; Katz, 1962, 1965), the cure for response set in interest inventories has been worse than the disease: in the KPR-V, for example, it has resulted in an alternation of ipsative and normative procedures that virtually nullify each other, making either type of interpretation dubious. As it happens, response set does not appear to be an obtrusive element in AIM scores, since the intercorrelations among AIM scales are low, and the number of Like responses does not emerge as a separate dimension in a factor analysis of the intercorrelation matrix of AIM scores, total Likes, and ability test scores.

Responses are scored 2 for Like, 1 for Indifferent, and 0 for Dislike. This procedure is parallel with the original Interest Index scoring of 1, 0, and -1, but avoids negative scores. Since there are 16 items for each scale, a score of 16 may be taken to represent an "indifference" level--a useful anchor point for comparing scores across scales. Paul Diederich, one of the authors of the original Interest Index, has devised an ingenious format enabling students to score their own answer sheets very quickly and simply (see Appendix E).

Scales

Because the procedures used in constructing and purifying AIM scales resulted in a relatively homogeneous set of items for each scale, the identification of items with a scale seems quite transparent. There is little doubt that students could--if they wished--"fake good" more readily on AIM scales than on the empirically keyed scales of the SVIB, the Minnesota Vocational Interest Inventory (The Psychological Corporation, 1965), and the Occupational Interest Survey (Science Research Associates, 1966). Clearly, AIM should not be used for selection, and no attempt has been made to construct a "lie" scale.

It should be noted, incidentally, that both the SVIB and the MVII provide homogeneous scales, in addition to the actuarially keyed occupational scales. The latter are cumbersome and difficult to interpret "psychologically" (Cronbach, 1970, p. 465). Occasionally, they may foster such anomalies as "the finding that on MVII, food-service managers average higher on the Baker key (that is, differ more from tradesmen-in-general) than bakers do" (ibid., p. 467). Indeed Campbell (1969) regards the Basic Interest Scales, as the homogeneous scales on the SVIB are called, as providing the "most important" interpretive data. Those scales, however, generally include no more than 12 items. Items for the SVIB were, as is well known, selected from a melange of items strictly on the basis of empirical validity, defined as differentiation of men in a given occupation from men-in-general. The collection of homogeneous clusters was a recent

afterthought. Although differential validity was also an element in selecting AIM items, there were other constraints: (1) items for each scale were selected from a population of items assembled to represent a given field; (2) validity was construed in respect to a subject or subject field logically appropriate to the scale in which the item was incorporated; (3) only items highly correlated with their own scale were retained. Any AIM items that turned out to be better predictive of marks, membership, or satisfaction in a field not logically associated with the scale would turn out to be an embarrassment. Thus, it will appear, as would be expected from the procedures used in constructing AIM, that the internal consistencies of AIM scales are quite high.

The current names of these scales are Biology, English, Art, Mathematics, Social Sciences, Secretarial, Physical Sciences, Foreign Languages, Music, Industrial Arts, Home Economics, and Business.

Interpretation of Scores

Most inventories convert raw scores into normative form for interpretation. Percentile ranks or standard scores are often based on some general reference group (cf. KPR-V) and purport to answer such questions as, "How does a student stand (in this interest) in relation to other high school males?" This question cannot be clearly answered when the items require forced-choice responses. But even in the best of circumstances, the utility of the answer for guidance is not clear. At the same time, normative conversions of raw scores often interfere with the more clearly useful ipsative type of comparison, in which an individual's interest in one field is compared with his interest in another field. The interpretation then must go, "His standing relative to other high school males is higher in this interest than in that." "Relative to other high school males" introduces noise into the ipsative comparison. His percentile rank may be much higher in Music than in Industrial Arts even though he as an individual prefers Industrial Arts. The reversal in percentile ranks is primarily a function of the fact that high school males generally like Industrial Arts better than Music.

Comparisons between absolute scores in different fields also present problems, of course. One field may be better represented than the other by AIM scales. But this problem is not avoided by a normative conversion of scores--it is only compounded.

The main use of the norms tables for AIM will probably be for research, particularly if AIM serves--like the old Interest Index--as a criterion measure. Since the distributions for many of the scales are not normal, percentile ranks will be helpful in interpreting, let us say, the nature of gains made by high ability females on the Physical Scien scale after exposure to an experimental curriculum treatment in grade 11. In other words, comprehensive norms for 11th-graders (published in conjunction with this report under separate cover) may provide a context for understanding the effects of experience. It is difficult to see any use for such norms in prediction, however, except as an inadequate and distracting substitute for validity data.

Prediction is the main subject of a report scheduled to appear immediately after this one. It will take into account such criteria as marks and interests in grades 12 and 13. AIM profiles for various major field and occupational groups will also be included. Unlike the SVIB and OIS, however, the data to be reported for AIM do not emphasize group membership. Resemblance to a group may help predict what choice a student is likely to make. Such predictions seem to have very dim usefulness in guidance. The other two criteria represent outcomes of a choice rather than the choice itself. Admittedly much more elusive, they appear to represent better standards by which to judge the relevance of AIM for guidance. The contribution of AIM will be considered in conjunction with other predictors. Particular attention will be given to differential prediction.

BACKGROUND AND PURPOSE

In the fall of 1966 the first tests were administered for a national norming and longitudinal study of the Preliminary Scholastic Aptitude Test (PSAT) and Academic Interest Measures (AIM), under the sponsorship of the College Entrance Examination Board. The major objectives of this research were to revise the PSAT norms for grades 11 and 12; develop PSAT norms for grade 10; develop AIM norms for grade 11; and study the validities, possible uses and interpretations of AIM.

Three sequential phases of research were planned. Phase I was directed toward the development of norms for both PSAT and AIM and toward gathering evidence of AIM's construct validity; phase II was concerned with determining the internal consistencies and one- and two-year stabilities of scores on the AIM scales; phase III centered on investigating the predictive validities of AIM scales.

In the course of fulfilling these study objectives, several issues of theoretical and practical concern for education were investigated. The research design provided an excellent opportunity to investigate the academic interests of high school students grouped according to sex, ability, socio-economic status, and curriculum membership. Intercorrelations among scores on the 12 AIM scales and PSAT provided a basis for studying the structure of academic interests; further illumination was supplied by relationships with variables derived from a Student Questionnaire (Appendix A).

The intent of the present report is to summarize some of the findings for phases I and II of the PSAT-AIM study[1] and relate these findings to a number of issues concerning the nature and measurement of academic interests.

[1] It should be noted that this report does not include the PSAT norms. These norms for high school seniors, juniors, and sophomores were published in College Board Score Reports (1969-70).

METHOD

An attempt was made to choose a sample of secondary schools representative of those in the nation. In the initial stage, the PSAT and a Student Questionnaire were administered to the sophomores, juniors and seniors in these schools. AIM was also administered to the juniors, who constituted th population for a longitudinal study that extended through one year after thei high school graduation.

Selection and Characteristics of the Sample

From the more than 22,500 schools in the College Entrance Examination Board listing of secondary schools in the United States, 299 were selected at random. A school questionnaire (Appendix B) was sent to each of these schools, to obtain information on such characteristics as size, curricula, proportion of students who go on to college, instructional budgets, and willingness to participate in the study. Up to four follow-up inquiries were made to have each questionnaire completed. Toward the end of the school selection process, it appeared that the Southwest would be underrepresented in the sample. To correct for geographical imbalance, two additional schools in the Southwest were asked to participate, bringing to 301 the total number of schools approached. Every school returned at least a partially completed school questionnaire. Schools agreeing to cooperate in this study also agreed to test all of their sophomores, juniors, and seniors.

It is impossible to determine whether this sample frame represents "all United States secondary schools"--a population which is both nebulous in definition and transient in membership. All the available frames list high schools covering two, three, four, and six years of schooling; adult education schools; evening schools; correspondence schools with or without

classrooms; and specialized schools for various ethnic, language, or nationality groups. In this study, several "atypical" schools are known. These include a school transplanted from Cuba, one located on an Indian reservation, one restricted to mute children, and an experimental high school attached to a university. Clearly, however, the sample is not representative of all "atypical" schools.

Even if rigid criteria for inclusion and exclusion from the population could be agreed upon, the population itself is continually changing as schools merge, new schools appear, and others disappear. Some indication of how rapidly the population changes is provided by the sample drawn. Although the frame has been "updated" annually, the following status changes were found among the 301 schools: 7 had merged with another school; 3 had closed permanently; 7 were not secondary schools (Table 1). In other words, 6% of the listings in the frame were in error.

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Insert Table 1 about here

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In this situation, a reasonable approach is to exercise all due care in the survey procedures and then to compare the results with those of other investigations in which one has confidence. To the extent that different investigations have adequately sampled the same population, their sample characteristics should be the same.

Responses to the questionnaire sent to every sample school permit statistics for the total sample and for participating and nonparticipating schools to be compared with data published by the United States Office of Education (USOE). In these comparisons, chi-square was used to test the

Table 1

School Status

	N	%
Participating schools		
Status unchanged	180	
Merged with nonsampled school	5	
Additions to sample[a]	2	
Subtotal	187	62
Nonparticipating schools		
Status unchanged	102	
Merged with nonsampled school	2	
Not a secondary school	7	
Closed	3	
Subtotal	114	38
Total	301	100

[a]Early returns suggested that large schools and the Southwest would be underrepresented. These two schools were added to correct for the anticipated bias.

goodness of fit between population parameters reported by USOE, on the one hand, and total school sample, participating schools, and nonparticipating schools, on the other.

Geographical location. The geographical distribution of neither the sample schools nor the participant schools differed significantly from USOE data (see Table 2). The participating schools, however, consisted of a smaller proportion in the Great Lakes and Plains region (26%) and a higher proportion in the Southeast (32%) than USOE reported (31% and 27%, respectively).

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Insert Table 2 about here

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Proportion of public schools. USOE reported that, in 1961-62, 86% of all secondary schools were public. Table 3 shows statistically significant differences for both the sample and the participants, which have smaller percentages of public schools (82% and 77%, respectively).

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Insert Table 3 about here

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College-going rates. The percentages of students going on to college are shown in Table 4. The college-going rate for the sample was 50%, and, for the participants, 51%. The USOE reported a rate of 48% for 1964. USOE also provided a 1960 rate of 55% for all nonpublic schools. The rate for nonpublic participants, 73%, was considerably higher. This difference for nonpublic schools was probably due in large part to the smaller proportion of parochial schools among the participants than among the USOE schools. Of the 43 nonpublic participants, 19 (44%) were parochial schools, whereas 88% of the nonpublic USOE schools were church related.

In terms of common belief, at least, nonpublic-nonparochial schools have a higher college-going rate than do parochial schools. Because the number of

Table 2

Geographical Location of Secondary Schools

Geographical[a] Region	USOE[b]		Sample		Participants		Nonparticipants	
	N	%	N	%	N	%	N	%
North Atlantic	5,555	19	60	20	40	21	20	18
Great Lakes and Plains	9,113	31	95	31	49	26	46	40
Southeast	7,969	27	90	30	60	32	30	26
West and Southwest	6,842	23	56	19	38	21	18	16
Total	29,479	100	301	100	187	100	114	100
χ^2			4.00		4.69		5.87	
df			3		3		3	
p			n.s.		n.s.		n.s.	

[a]North Atlantic: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

Great Lakes and Plains: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.

Southeast: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia.

West and Southwest: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming.

[b]USOE Digest of educational statistics, OE - 10024-65. Government Printing Office, 1965. Table 97, Number of local basic administrative units and number of schools of specified types, by state: 1961-62, pp. 122-123. Secondary schools include regular four-year high schools, junior high schools, senior high schools, and junior-senior high schools.

Table 3

Public-Nonpublic Classification of Secondary Schools

	USOE[a]		Sample		Participants		Nonparticipants	
	N	%	N	%	N	%	N	%
Nonpublic								
Parochial	-	-	22	-	19	-	3	-
Private, religious	-	-	23	-	18	-	5	-
Private, nonreligious	-	-	5	-	4	-	1	-
Other	-	-	2	-	2	-	0	-
Total	4,129	14	52	18	43	23	9	9
Public	25,350	86	234	82	143	77	91	91
Public and Nonpublic	29,479	100	286	100	186	100	100	100
χ^2			4.9		14.5		2.08	
df			1		1		1	
p			.05		.001		n.s.	
No Response	-	-	15	-	1	-	14	-
Total	29,479	-	301	-	187	-	114	-

[a]USOE Digest of educational statistics, OE - 10024, Government Printing Office, 1965. Table 97, Number of basic administrative units and number of schools specified by types, by state: 1961-62, p. 122-123. Secondary schools include regular four-year high schools, junior high schools, senior high schools and junior-senior high schools.

nonpublic schools is small, the underrepresentation in parochial schools does not create a serious difference between the total participant rate (51%) and the total USOE rate (48%). It should also be noted that the college-going rate probably increased between 1964 (the basis for the USOE report) and 1966 (when the study sample was drawn).

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Insert Table 4 about here

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Enrollments. The sample selection procedure used was designed to provide a representative sample of students, as well as of schools, through the testing of all students. The figures in Table 5 are estimates of grade enrollment. Those estimated were arrived at by categorizing the participating and non-participating schools according to size of enrollment in 10th and 12th grades. The midpoint of each enrollment category was multiplied by the number of schools in that category. These figures were summed for each grade. The sums were multiplied by the total number of secondary schools in the United States and divided by the total number of participating or nonparticipating schools. The distribution of students across grade levels for participants was very similar to the USOE figures at each grade level, but nonparticipants had larger numbers of students. This reflected the tendency of large schools not to participate in studies of this kind, presumably because of the greater administrative difficulties entailed for them.

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Insert Table 5 about here

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Per pupil expenditures. The schools have been asked to state their total instructional budget, excluding capital outlay and building budget, and to specify the number of students covered by that budget. Because 28% of the

Table 4

Percentages of Graduates Going on to College

	USOE (1960)[a]	USOE (1964)[b]	Participants[c]	Nonparticipants[c]
Public	--	--	45	48
Nonpublic	55	--	73	56
Total	--	48	51	48

[a]USOE Statistics of nonpublic secondary schools, 1960-1961. OE-20050 Government Printing Office, 1961.

[b]USOE Digest of educational statistics. OE-10024. Government Printing Office, 1965. Table 119, Course enrollment and labor force status of 1964 high school grades 16 to 24 years of age in civilian noninstitutional population by color, sex, and marital status.

[c]Computed by multiplying the percentage of schools in each of four intervals of college-going rate by the midpoint of the intervals (see item 6 in School Questionnaire, Appendix B).

Table 5

Enrollment by Grade Level[a]

	USOE[b]		Participants		Nonparticipants	
	N	%	N	%	N	%
Grade 10	3.3	.36	3.5	.36	5.1	.35
Grade 11	3.0	.33	3.2	.33	4.9	.33
Grade 12	2.8	.31	3.0	.31	4.7	.32
Totals	9.1	1.00	9.7	1.00	14.7	1.00

[a]In millions.

[b]USOE Digest of educational statistics. OE-10024 Government Printing Office, 1965. Tables 97 and 13. USOE Statistics of public schools, Fall 1964, final report. OE-20007 Government Printing Office, 1964. Table 5.

sample were unable to supply the information in this form at the time it was requested, the comparisons here are less reliable than the other data presented. The estimated average per pupil expenditures were $543 for the sample, and either $503 (based on average daily attendance) or $532 (based on average daily membership) from USOE (Table 6).

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Insert Table 6 about here

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Adequacy of the sample. In general, the characteristics of the sample of schools participating in the PSAT-AIM norming study seemed to jibe quite well with the USOE parameters. Because there were some differences, however, a set of norms was constructed by weighting data from sample schools to reflect the frequency of each class of school in the USOE population. These weighted norms turned out to be so nearly identical with the unweighted norms as to make the departure from obtained data supererogatory. Therefore, only the unweighted norms have been published.

To conclude this description of the sample, the procedures and comparisons cited here seem to indicate that the sample of participating schools was sufficiently representative to warrant generalizations from the findings.

Data Collection

An overview of the data collected for phases 1 and 2 of the PSAT-AIM study appears in Figure 1. In general, the PSAT and a Student Questionnaire were administered to all sophomores, juniors, and seniors (except for students absent from school on both the primary and makeup testing dates) in late October or early November, 1966. In a few very large schools, however, specified proportions of students were systematically selected for testing. In addition, AIM was administered to the juniors at all schools, and to the sophomores at 11 of the schools.

Table 6

Per Pupil Expenditures

	Sample		Participants		Nonparticipants	
	N	%	N	%	N	%
0- 399	110	51	83	53	27	45
400- 499	35	16	26	17	9	15
500- 599	22	10	14	9	8	14
600- 699	15	7	10	6	5	8
700- 799	8	4	4	3	4	7
800- 899	4	2	2	1	2	3
900- 999	3	1	1	1	2	3
1000-4999	18	8	15	10	3	5
5000+	1	0	1	0	-	-
Total	216	100	156	100	60	100
No Response	85		31		54	
Total	301		187		114	

Estimated average expenditures:

Sample[a]	$543
USOE ADA[b]	$532
USOE ADM[b]	$503

[a]Estimated by using midpoint of each interval, except for highest interval where lower bound was used.

[b]USOE 1965 fall statistics of public schools. OE-20007 Government Printing Office, 1966. Table 12, pp. 26-27.
ADA = expenditure per pupil in average daily attendance.
ADM = expenditure per pupil in average daily membership.

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Insert Figure 1 about here

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The second contact with the study sample was made in the fall of 1967. At this time the students in 6 of the 11 schools who had originally been tested with both PSAT and AIM as sophomores in the fall of 1966 were retested with both instruments. Students in the other 5 schools were contacted in the fall of 1968 and retested with AIM. This test-retest pattern provided the data for determining AIM scale reliabilities, including stabilities over one-year and two-year intervals.

In order to fulfill phase 3 objectives, letters and return postcards were sent in May 1968 to the students who were originally tested as juniors in the fall of 1966. Additional communication with these students was scheduled in the spring of 1969.

Description of Test Instruments and Variables

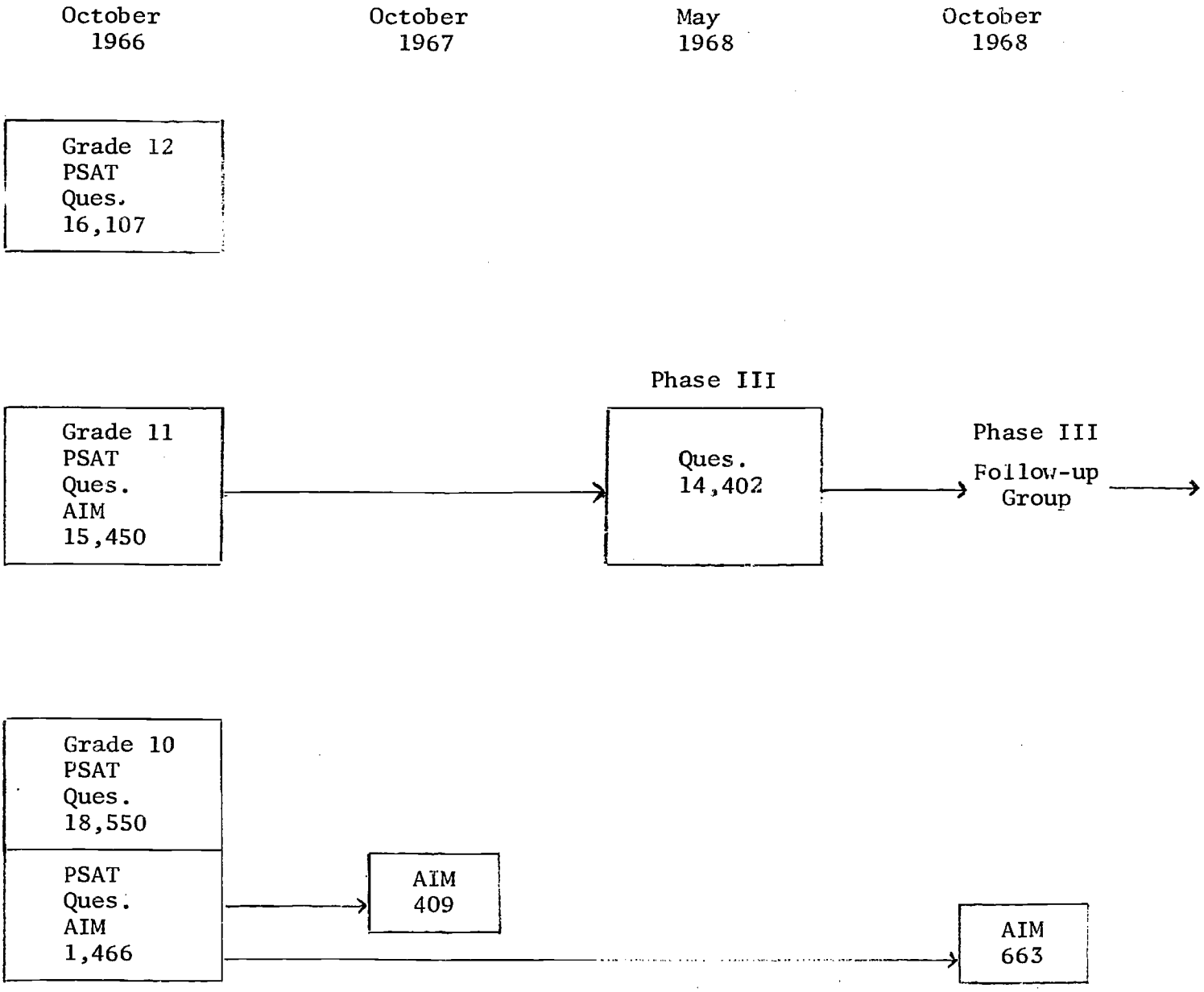
The PSAT is a shortened version of the Scholastic Aptitude Test, yielding scores for verbal (PSAT-V) and mathematical (PSAT-M) abilities.

AIM is an interest inventory designed to assess interest in 12 subject fields that are commonly included in secondary school curricula: Biology, English, Art[2], Mathematics, Social Sciences, Secretarial, Physical Sciences, Foreign Languages, Music, Industrial Arts[2], Home Economics, and Business[2]. There are 16 items for each scale, making a total of 192. Students respond to the items, which designate activities representative of the work in each field, by indicating "Like," "Indifferent," or "Dislike."

[2]Names of these AIM scales replace earlier names in order to provide more accurate descriptions.

Figure 1

Data Collection: Phases I and II



In general, all totals consist of approximately equal numbers of males and females who completed all measures administered in each grade.

The Student Questionnaire contains a total of 28 items (Appendix A). All forms include 16 questions on socioeconomic status (SES), curriculum type, consistency of curriculum choice, definiteness of vocational plans (PLANS), occupational opportunity preference (SCORE A-D), post-secondary school plans, and the number of years of post-secondary schooling planned (YRS).

The remaining 12 questions vary across 20 different forms, which were spiraled throughout the sample so that approximately 5% of the sample took any one form. Sixteen of these forms contain different sets of items from Project TALENT Information Scales; one includes items concerned with nonclassroom activities; two include items requiring a self-rating of interest in school subjects; and one has items requesting self-rated interest in the 12 subject fields represented in AIM.

For ease in reference, a glossary of variables included in the study is presented in Appendix C.

FINDINGS

This report focuses on findings that pertain to the psychometric characteristics of AIM: the score distributions and norms, the structure of the scales, reliabilities, and evidence of construct validity. A later publication will report follow-up data and will discuss predictive validities.

Score Distributions

One of the questions we sought to investigate was whether there are substantial differences between distributions of AIM scores for students grouped in various ways. Since our normative group consisted of approximately 15,500 grade 11 students who had taken the PSAT, AIM, and a Student Questionnaire, we were able to form groups according to sex, ability level, curriculum, and socioeconomic status (SES). PSAT-V score ranges of 20-29, 30-39, and 40-80 divide the sample approximately into thirds, and define for our purposes the groups of Low, Middle, and High ability. An index of SES (Low, Middle, or High) was derived from a combination of father's occupational level and mother's education (see Figure 2). According to this classification, 13% of the juniors were in the high SES category, 47% in the middle, and 40% in the low.

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Insert Figure 2 about here

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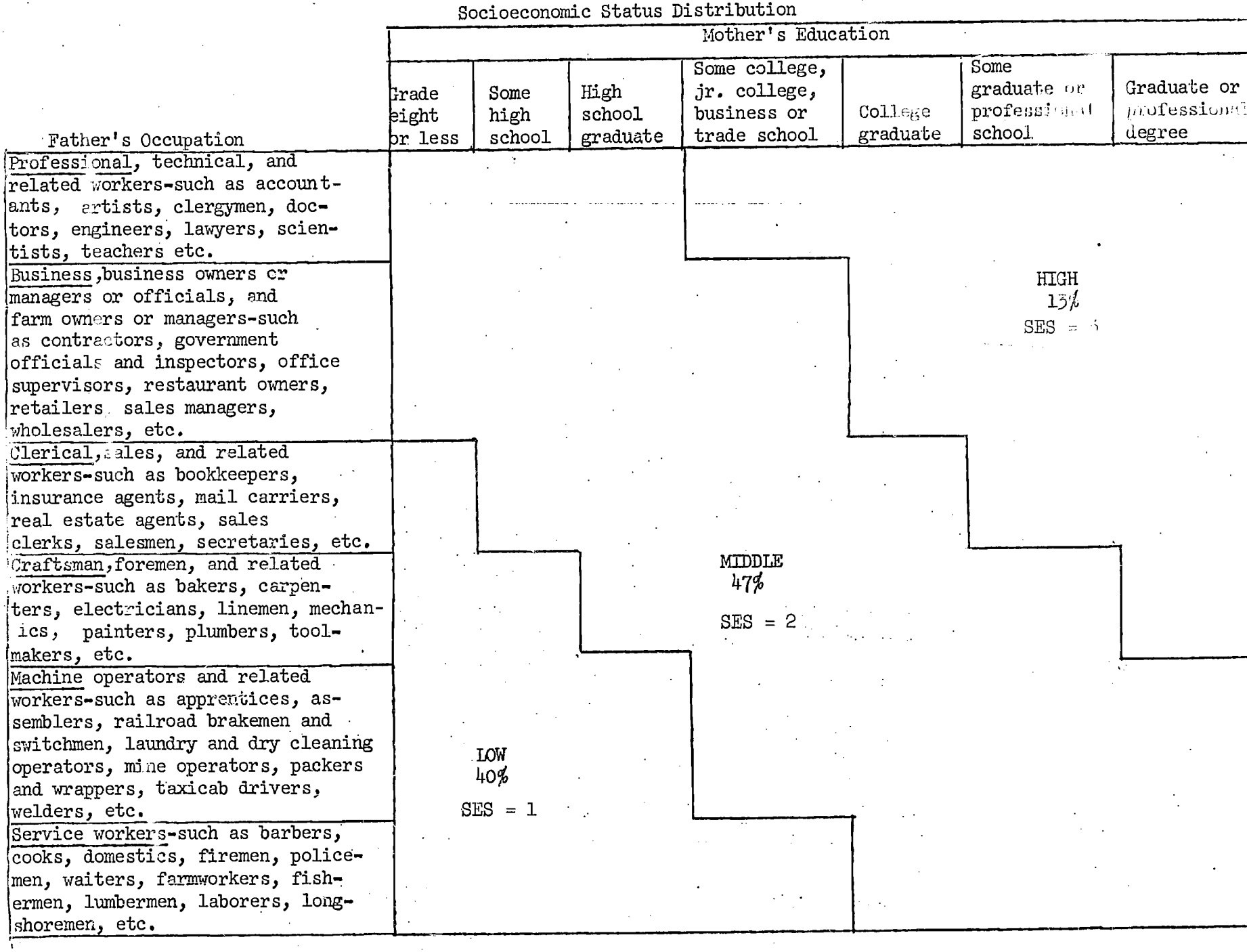
Students identified their curriculum membership as one of the following: Academic or College Preparatory, Agriculture, Business or Commercial, General, Home Economics, Vocational or Industrial Arts. Table 7 shows the

Figure 2


Socioeconomic Status Distribution
Mother's Education
Father's Occupation
Grade eight or less
Some high school
High school graduate
Some college, jr. college, business or trade school
College graduate
Some graduate or professional school
Graduate or professional degree
Professional, technical, and related workers-such as accountants, artists, clergymen, doctors, engineers, lawyers, scientists, teachers etc.
Business, business owners or managers or officials, and farm owners or managers-such as contractors, government officials and inspectors, office supervisors, restaurant owners, retailers, sales managers, wholesalers, etc.
Clerical, sales, and related workers-such as bookkeepers, insurance agents, mail carriers, real estate agents, sales clerks, salesmen, secretaries, etc.
Craftsman, foremen, and related workers-such as bakers, carpenters, electricians, linemen, mechanics, painters, plumbers, toolmakers, etc.
Machine operators and related workers-such as apprentices, assemblers, railroad brakemen and switchmen, laundry and dry cleaning operators, mine operators, packers and wrappers, taxicab drivers, welders, etc.
Service workers-such as barbers, cooks, domestics, firemen, policemen, waiters, farmworkers, fishermen, lumbermen, laborers, longshoremen, etc.
HIGH
13%
SES = 3
MIDDLE
47%
SES = 2
LOW
40%
SES = 1

distributions across curr[illegible] of juniors classified by SES and sex. It may be noted that the academ[illegible]rriculum attracted the greatest number of boys and girls at all SES leve[illegible]ith a single exception: more low SES girls chose the commercial curriculum

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[illegible]ert Table 7 about here

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In all, 108 unique [illegible]ings were possible (2 sexes X 3 ability levels X 6 curricula X 3 SES level[illegible] As expected, some of the groupings have a very small number of cases (e.g[illegible] males in home economics); so frequency distributions were compiled only for subgroups having at least 100 members. There were 42 such groups, and they included 91% of the total sample.

Scanning the distributions indicated that grouping on SES was unnecessary. While distributions for a number of the scales varied substantially according to sex, ability, and curriculum, it seemed reasonable to pool cases from the three SES categories. When the 3 SES categories are combined there remain 27 subgroups. Separate percentile rank norms tables have been prepared for each of these 27 subgroups, as well as for all males and all females (Appendix D under separate cover). Table I in Appendix D can be used to locate relevant norms according to sex, ability level, and curriculum.

As far as interest in school subjects is concerned, it is clear that males are different from females. Table 7a shows the rank order of the AIM scales by mean score for each sex (pooling all ability levels and curricula). Industrial Arts and Physical Science rank highest for males and lowest for females. Home Economics, Secretarial, [illegible] Foreign Languages rank highest for females and relatively low for males. Males tend to like Mathematics much more than females do, and the reverse holds for English. In short, to summarize the difference between sexes in academic interest, the rank-difference correlation between the two columns of means in Table 7a is -.70.

Table 7

Socioeconomic Status and Curriculum: Grade 11

Curriculum	Males						Females					
	High		Middle		Low		High		Middle		Low	
	N	%	N	%	N	%	N	%	N	%	N	%
Academic	768	78.6	2096	58.0	1034	35.7	803	77.8	2003	54.3	1003	30.9
Agriculture	11	1.1	87	2.4	203	7.0	-	-	11	0.3	27	0.8
Commercial	41	4.2	300	8.3	322	11.1	68	6.6	874	23.7	1162	35.8
General	126	12.9	783	21.7	817	28.2	132	12.8	632	17.2	693	21.4
Home Economics	-	-	15	0.4	37	1.3	14	1.4	96	2.6	251	7.7
Vocational	31	3.2	334	9.2	479	16.7	15	1.4	71	1.9	111	3.4
Total	977		3615		2892		1032		3687		3247	
% of grand total		13.1		48.3		38.6		13.0		46.3		40.7

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Insert Table 7a about here

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Interest scores also differ somewhat by ability levels (although the correlations between PSAT-V and AIM tend to be low, averaging around .05) and by curriculum. The effects of these variables often interact with those of sex.

Figures 3, 4, 5, and 6 illustrate the distinctions between selected AIM distributions according to sex, ability, and curriculum. Figure 3 highlights the nature of the differences for sex and ability simultaneously, on the AIM English scale. As can be seen from the curves representing the distributions of scores, the High ability males tend to score higher than the Middle and the Low ability males, and the distribution of their scores looks quite similar to the distributions for the Low and the Middle ability females. The High ability females clearly seem to have much higher interest in English than any of the other groups. A glance at the median scores, presented below, for these six groups on the English scale reinforces this impression:

	Ability Level		
	Low	Middle	High
Males	10.2	11.0	15.8
Females	16.2	17.4	21.8

Note that the medians for all the male groups on English were below 16, which may be regarded as the "indifference" level. (Item responses are scored 2 for Like, 1 for Indifferent, and 0 for Dislike. There are 16 items per scale.)

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Insert Figures 3, 4, 5, and 6 about here

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Table 7a

Rank Order of AIM Scales by Mean Score for Each Sex

Males			Females		
Scale	Mean	S.D.	Scale	Mean	S.D.
Industrial Arts	22.55	7.95	Home Economics	25.35	6.03
Physical Sciences	20.01	8.95	Secretarial	22.39	8.36
Business	18.22	8.03	Foreign Languages	20.79	9.67
Biology	17.39	8.54	Art	19.76	8.08
Social Sciences	17.34	9.09	English	18.75	7.95
Mathematics	17.09	9.66	Business	18.71	7.38
Secretarial	16.02	7.46	Social Sciences	17.03	9.03
Foreign Languages	14.99	10.10	Music	16.57	8.63
Art	14.83	8.08	Biology	15.68	8.44
English	13.51	8.12	Mathematics	12.86	9.44
Music	13.45	8.90	Physical Sciences	11.70	8.96
Home Economics	12.61	7.35	Industrial Arts	10.96	8.04

COMPARISONS OF SELECTED AIM DISTRIBUTIONS BY SEX AND ABILITY
(ACROSS ALL CURRICULA AND SES LEVELS)

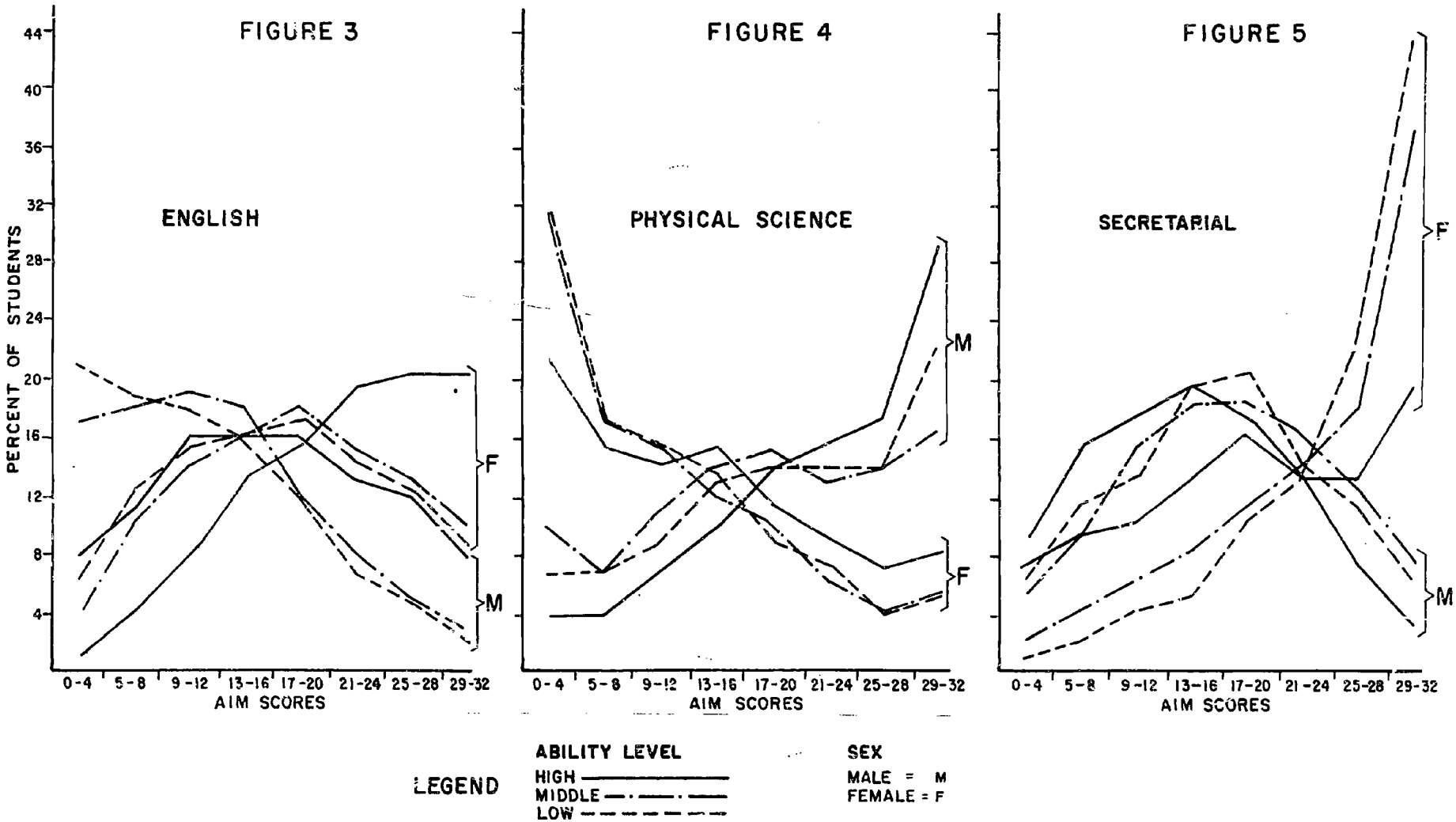

FIGURE 6

COMPARISONS OF MEDIANS FOR FOUR CURRICULUM GROUPS ON RELEVANT AIM SCALES
(MALES, MIDDLE ABILITY, MIDDLE SES)

CURRICULUM	AIM SCALE			
	MATHEMATICS	SECRETARIAL	INDUSTRIAL ARTS	BUSINESS
COLLEGE PREPARATORY	(20.3)	16.2	24.5	19.6
BUSINESS	13.4	(20.3)	23.5	(23.8)
GENERAL	11.8	15.6	24.0	16.4
INDUSTRIAL ARTS	14.7	14.9	(27.7)	14.8

The distributions for the Physical Science scale, as one would predict, show a strikingly different picture (see Figure 4). Median scores for males at the High, the Middle, and the Low ability levels are 23.0, 20.0, and 18.0 (each above 16, the midpoint of the scale or the "indifference" point). The medians are 12.0 for the High ability females and 8.5 and 8.8 for the Middle and the Low ability females, respectively.

One might anticipate that on certain AIM scales the High ability group would score lower than the Middle and the Low ability groups. This is indeed the case. For example, on the Secretarial scale (see Figure 5), the median score for the High ability girls is 18.8, for the Middle and the Low ability girls 25.2 and 27.1, respectively. A similar tendency appears for the boys' medians: 14.0 for the High ability group, 16.2 and 16.8 for the Middle and the Low.

As indicated in some of the illustrative data given above, the High ability groups on various scales often differ substantially from the Middle and Low ability groups, but the differences between Middle and Low groups are negligible. In later norms tables, therefore, we may find it expedient to reduce the number of groups further by pooling Middle and Low ability students.

Finally, Figure 6 illustrates the differences between median scores obtained by various curriculum groups on several relevant AIM scales. Because curriculum tends to vary with sex and (especially) ability, this figure includes only the males at the Middle level of ability (and SES). The median circled is the one that should logically be highest for each scale, and in every case it is: the students in a college preparatory curriculum are much higher than the others on the Math scale; the students in a Business curriculum are much higher than the others on the Sec and Bus scales; and the Industrial Arts students are highest on the Ind Art scale, although here the difference is not so striking--all male groups tend to score relatively high on this scale.

Scale Structure

The structure of academic interests of eleventh-grade boys and girls was another topic we sought to investigate. Intercorrelations of the 12 AIM scales and two ability variables--PSAT-V and M--provided the basis for our inquiry.

Table 8[3] indicates that the relationships between AIM scales tend to be moderate to low. Correlations of .50 or above are found for both males and females between (a) Physical Science and Biology, (b) Physical Science and Industrial Arts, (c) English and Social Sciences, (d) Business and Secretarial. For males only, correlations of .5 or higher are found for (a) English and Foreign Language, (b) Business and Social Sciences, (c) Business and Home Economics, and (d) English and Music. Similar patterns were found in an earlier study of AIM (Halpern, 1967).

On the whole, the pattern of AIM intercorrelations makes good sense. Even without resorting to sophisticated statistical analyses, we can begin to identify several clusters of academic interests. One such cluster, composed of Biology-Physical Science-Industrial Arts might roughly be labeled Science and Technology Interest. Yet another appears as English-Social Sciences-Foreign Language-Music, or Liberal Arts Interest. Business-Secretarial (and possibly Home Economics) shows up as a third cluster.

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Insert Table 8 about here

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With regard to the relationship between interest and ability, it is encouraging to note that with only one exception (Math and PSAT-M for females)

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[3]AIM scale means and standard deviations in Table 8 differ very slightly from those in Table 7a because of a difference in the samples. Table 8 is based on all males and all females who took AIM and the PSAT. Table 7a is based on the slightly smaller norms sample, who also filled out the student questionnaire.

Table 8

Intercorrelations of AIM and PSAT[a]

AIM Scales	Bio	Eng	Art	Math	Soc Sci	Sec	P Sci	F Lang	Mus	Ind Art	Home Ec	Bus	PSAT-V	PSAT-M	Means	S.D.
Bio		.17	.22	.27	.26	.19	.66	.25	.20	.33	.34	.23	.03	.02	17.30	8.53
Eng	.09		.37	.25	.61	.26	.27	.55	.50	.02	.33	.44	.27	.15	13.30	8.11
Art	.14	.34		.15	.20	.29	.27	.32	.42	.42	.43	.25	-.03	-.07	14.87	8.08
Math	.26	.14	.08		.26	.25	.46	.28	.15	.30	.21	.35	.20	.39	16.84	9.64
Soc Sci	.27	.55	.17	.17		.25	.36	.46	.30	.03	.29	.54	.23	.15	17.03	9.08
Sec	-.04	-.10	-.03	.05	-.09		.18	.27	.25	.27	.49	.70	-.16	-.12	16.07	7.47
P Sci	.72	.24	.23	.40	.39	-.09		.33	.26	.50	.32	.33	.19	.19	19.82	9.02
F Lang	.18	.49	.27	.22	.42	-.02	.27		.42	.10	.35	.41	.19	.12	14.84	10.08
Mus	.23	.48	.35	.18	.34	-.01	.32	.38		.17	.38	.28	.07	.01	13.42	8.87
Ind Art	.38	.14	.47	.30	.16	.06	.52	.17	.32		.36	.25	-.06	-.01	22.[illegible]	7.93
Home Ec	.16	.07	.14	.10	.09	.43	.10	.08	.15	.18		.51	-.13	-.11	12.69	7.43
Bus	.12	.17	.08	.23	.29	.68	.21	.20	.18	.24	.42		.03	.04	18.06	8.09
PSAT-V	.06	.28	.14	.10	.21	-.34	.13	.25	.15	.04	-.21	-.19		.78	35.54	11.72
PSAT-M	.06	.17	.10	.52	.11	-.28	.12	.19	.11	.09	-.17	-.16	.76		39.24	11.98
Means	15.58	18.49	19.69	12.79	16.80	22.51	11.63	20.6[illegible]	16.42	10.97	25.32	18.72	35.85	36.24		
S.D.	8.41	8.00	8.04	9.39	9.03	8.32	8.95	9.72	8.62	8.03	6.35	7.42	10.88	10.39		

[a]Males above the diagonal; females below the diagonal

all the AIM-PSAT correlations are below .5. The rather low relationships between the AIM scales and PSAT lend support for the justification of an interest measure apart from an ability measure.

Maximum likelihood factor analyses of the intercorrelation matrix for boys and for girls helped to sharpen the picture and to corroborate the distinctiveness of the interest measures from the ability measures. A five factor solution, separately by sex, is presented in Table 9.

For the girls, a five factor solution appears adequate, for the structure is beautifully simple. (Because of the huge sample size, a chi-square test cannot be relied upon to give an indication of the appropriate number of factors.) Factor I stands out clearly as an Ability factor with AIM having negligible loadings on it. One possible exception is Mathematics interest, which, as in earlier three and four factor solutions, bears a closer relationship to ability than do any of the other interests. Indeed, Mathematics interest, which we identify as Factor III, does not emerge as a separate factor previous to the five factor solution. Factor II is readily identifiable as Business interest, Factor IV as Science interest, and Factor V as Liberal Arts interest. Once again, if we look back to earlier solutions, we find that for females, Science and Liberal Arts interests bear a close connection to one another, while Business interest clearly stands apart.

The five factor solution for the boys is not quite so clear as it is for the girls, giving some indication that a six factor solution may be called for. Corresponding to the factors for the females are an Ability factor (I), a Business factor (II), a Science factor (IV), and a Liberal Arts factor (V). Factor III, for the males, we have elected to call Nonacademic interest. Notice that for the boys Mathematics interest has a sizable loading on both the Ability and Science factors and does not emerge as a separate factor. The three

and four factor solutions indicate, as in the case for the girls, that Mathematics interest stands closer to Ability than do any of the other interests. Science, however, emerges early as a separate factor for the boys.

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Insert Table 9 about here

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In view of the vastly disparate score distributions for boys and girls on AIM scales, the similarity in structure for both sexes is a bit surprising. For, if we assume that boys and girls attach the same meaning to their inventory responses (and this assumption is defensible in view of their common school experiences), then the differences in academic interests between the sexes appear to be of level and not of kind.

Internal Consistency and Stability

Score consistencies and stabilities of AIM scales are of concern for theoretical reasons that go beyond the conventional obligation to report such characteristics in any measuring instrument. We had hypothesized that (1) the acquisition of academic interests is developmental and experiential in nature, (2) these interests are sufficiently well defined by the mid-high school years to make their measurement meaningful, and (3) these interests are more fluid--less crystallized--than verbal and mathematical abilities.

Internal consistency coefficients (alpha) are presented in Table 10. All but two are in the .90's. These data are similar to what we find for the PSAT, with reported KR-20's for both PSAT-V and PSAT-M in the vicinity of .90 (ETS, 1967).

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Insert Table 10 about here

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Test-retest stabilities of AIM scales over a three-week interval were found in a previous study (Halpern, 1967) to cluster about .86. The current study

Table 9

Maximum Likelihood Solution for 5 Factors

Varimax-Rotated Factor Matrix

Males

	I	II	III	IV	V
Bio	-0.002	0.082	0.132	0.635	0.153
Eng	0.141	0.132	0.212	0.036	0.823
Art	-0.054	0.125	0.667	0.153	0.257
Math	0.385	0.268	0.127	0.357	0.112
Soc Sci	0.132	0.286	-0.069	0.181	0.675
Sec	-0.100	0.727	0.237	0.081	0.140
P Sci	0.153	0.088	0.097	0.954	0.220
F Lang	0.113	0.185	0.211	0.158	0.569
Mus	0.012	0.084	0.427	0.110	0.472
Ind Arts	-0.003	0.235	0.461	0.490	-0.150
Home Ec	-0.097	0.437	0.435	0.211	0.236
Bus	0.047	0.868	0.030	0.168	0.374
PSAT-V	0.768	-0.120	-0.085	0.042	0.233
PSAT-M	0.998	-0.025	-0.037	0.040	0.024

Females

	I	II	III	IV	V
Bio	0.017	0.029	0.036	0.761	0.118
Eng	0.084	0.019	0.033	0.002	0.806
Art	0.076	0.036	-0.027	0.156	0.385
Math	0.201	0.121	0.927	0.272	0.111
Soc Sci	0.029	0.020	0.032	0.221	0.653
Sec	-0.021	0.987	-0.034	-0.065	-0.143
P Sci	0.020	0.014	0.130	0.892	0.280
F Lang	0.108	0.079	0.103	0.102	0.594
Mus	0.043	0.085	0.053	0.185	0.551
Ind Arts	0.026	0.129	0.131	0.495	0.207
Home Ec	-0.150	0.456	0.040	0.094	0.111
Bus	-0.145	0.735	0.115	0.132	0.251
PSAT-V	0.780	-0.285	-0.073	0.047	0.293
PSAT-M	0.918	-0.134	0.358	0.031	0.104

Table 10

Internal Consistency Coefficients (Alphas) for AIM Scales

	Grade 11[a]	
AIM Scales	Male	Female
Bio	.92	.91
Eng.	.90	.89
Art	.91	.90
Math	.95	.95
Soc Sci	.94	.95
Sec	.88	.92
P Sci	.93	.95
F Lang	.96	.96
Mus	.92	.92
Ind Art	.91	.93
Home Ec	.90	.91
Bus	.91	.90

[a] N = 409 students in 5 schools who had been tested in grade 10 and were retested in grade 11. Alpha coefficients for grades 10 and 12 are virtually identical with those for grade 11, with differences not exceeding .02.

incorporated procedures to determine stabilities over one- and two-year periods. A random subsample of 11 schools was selected for this study of stabilities of AIM scores. All the grade 10 students in each of these schools were given AIM along with PSAT and the Student Questionnaire in 1966. The same students in approximately half the schools of this group were retested with AIM one year later, and the other half were retested two years later.

One- and two-year stability coefficients (test-retest correlations) for each of the AIM scales, by sex, are presented in Table 11. For males, the one-year stability coefficients range from a low of .60 (Secretarial) to a high of .75 (Mathematics), with a median r of .71. For the females, the range is .64 (Biology and Industrial Arts) to .77 (Music), with a median r of .70. The two-year stability coefficients for males range from a low of .52 (Business) to a high of .74 (Music), with a median r of .61. For females, the range is .52 (Business) to .69 (English), with a median r of .63. These stability coefficients appear consistent with our conceptualization of academic interests as somewhat fluid during the mid-high school years. That is, they are still likely to be responsive to experience.

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Insert Table 11 about here

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Construct Validities

From an investigation of the relationships between AIM scales and other variables included in the study, we sought to learn more about the nature of academic interests and to gain preliminary evidence of AIM's construct validity. We hoped to find AIM scales exhibiting moderate positive correlations with each of the several sets of relevant variables (relevant in the sense that they appear to bear some logical relationship to academic interests) and low or slightly negative correlations with variables considered irrelevant to or distinct from academic interests. The relationships between AIM scales and a number of such variables are described below.

Table 11

AIM Scale Stability Coefficients

	Males		Females	
AIM Scales	1-year	2-year	1-year	2-year
Bio	.71	.63	.64	.63
Eng.	.69	.60	.73	.69
Art	.73	.61	.71	.68
Math	.75	.66	.76	.67
Scc Sci	.73	.58	.68	.54
Sec	.60	.53	.65	.63
P Sci	.71	.65	.69	.63
F Lang	.69	.59	.70	.61
Mus	.73	.74	.77	.68
Ind Art	.72	.70	.64	.62
Home Ec	.66	.58	.70	.59
Bus	.66	.52	.67	.52

Self-rated Interest. One form of the Student Questionnaire contained 12 items, each of which bore a title corresponding to one of the 12 AIM scales, as they were then named. Unfortunately, those titles were not in every case the same as the names now used for the AIM scales: Art was then called Fine Arts, Industrial Arts was called Engineering, and Business was called Executive. The changes were made primarily because of the contents of the items for these scales, but consideration was also given to correlations between the scales and such other variables as are reported in the following sections. It may be noted that changing the names of two of the scales to Industrial Arts and Business was a return to the original names of these scales in the Interest Index originally developed for the Eight-Year Study (Smith & Tyler, 1942). The 5% random sample of students who were given this form of the questionnaire rated each of the 12 fields of interest on a 5-point scale ranging from "very interesting" to "very uninteresting." Correlations between these single ratings and AIM scores for males and females are presented in Tables 12a and 12b. Each of the AIM scales has its highest correlation (on the diagonal) with a similarly titled field of interest, and in general these correlations can be characterized as moderate, with half of them falling in the 40's.

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Insert Tables 12a and 12b about here

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A few exceptions to this moderate relationship between AIM scales and self-ratings may be noted. When the relationship is as high as in the area of Mathematics interest (for both males and females the correlation between the two measures is around .7), the efficiency of the single direct question poses a challenge to the 16-item scale. The acid test will come shortly when we look at the predictive validities of both these measures. Until then, we feel some assurance that the scales seem to be measuring what they purport to

Table 12a

Correlations between AIM, PSAT and Self-rated Interest

(Full Scale AIM vs. Single Item)

(Males)

AIM Scales	Self-rated Interest											
	Bio	Eng	Fine Arts	Math	Soc Sci	Sec	P Sci	F Lang	Mus	Engi-neering	Home Ec	Execu-tive
Bio	.43	.07	.06	.12	.13	.11	.36	.16	.03	.08	.12	.06
Eng	.15	.38	.24	.14	.29	.06	.16	.32	.25	.06	.05	.30
Art	.08	.12	.39	.02	.05	.11	.09	.14	.20	.15	.17	.03
Math	.14	.11	.01	.68	.15	.10	.23	.18	.01	.27	-.01	.26
Soc Sci	.13	.29	.05	.14	.48	.06	.26	.29	.08	.06	-.00	.32
Sec	.09	.08	-.01	.15	.16	.41	.02	.10	.07	.12	.22	.23
P Sci	.31	.05	.17	.21	.28	.11	.46	.19	.07	.23	.09	.18
F Lang	.12	.18	.19	.11	.26	.07	.22	.58	.23	.03	.12	.16
Mus	.09	.21	.30	.05	.13	.09	.12	.17	.56	.03	.13	.10
Ind Art	.12	-.11	.22	.13	-.05	.18	.09	-.05	.01	.43	.22	.03
Home Ec	.07	.07	.13	.06	.08	.23	.06	.12	.15	.12	.38	.07
Bus	.05	.15	.04	.24	.27	.33	.09	.18	.05	.17	.16	.42
PSAT-V	.15	-.02	.00	.10	.17	-.12	.18	.19	-.03	-.06	-.16	.14
PSAT-M	.16	-.07	-.01	.30	.09	-.07	.22	.20	-.02	.04	-.10	.15
Mean	3.99	3.26	3.26	3.68	3.56	2.13	3.63	2.99	3.24	3.92	2.10	3.34
S.D.	1.04	1.12	1.24	1.19	1.09	1.09	1.14	1.35	1.42	1.10	1.14	1.16

Table 12b

Correlations between AIM, PSAT and Self-rated Interest

(Full Scale AIM vs. Single Item)

(Females)

AIM Scales	Self-rated Interest											
	Bio	Eng	Fine Arts	Math	Soc Sci	Sec	P Sci	F Lang	Mus	Engi-neer-ing	Home Ec	Execu-tive
Bio	.41	.05	.08	.20	.25	-.14	.39	.04	.10	.24	.00	-.06
Eng	.10	.43	.31	.09	.22	-.17	.08	.29	.31	.17	-.05	.11
Art	.01	.06	.47	-.05	.13	-.08	.08	.10	.12	.15	.01	.03
Math	.12	.07	-.01	.72	.07	-.03	.19	.12	.10	.33	-.03	.09
Soc Sci	.13	.28	.15	.11	.39	-.16	.20	.27	.27	.23	-.09	.13
Sec	-.22	.02	-.17	.00	-.13	.72	-.15	-.08	-.02	-.06	.32	.27
P Sci	.28	.11	.14	.23	.27	-.19	.43	.12	.13	.32	-.13	-.01
F Lang	.10	.23	.20	.13	.13	-.06	.08	.66	.22	.07	-.08	.09
Mus	.04	.20	.32	.10	.19	-.11	.14	.18	.60	.16	.03	.02
Ind Art	.05	.01	.17	.15	.09	-.07	.18	.02	.13	.47	.02	.01
Home Ec	-.08	.11	-.03	.11	.00	.34	.08	-.05	.06	.02	.49	.14
Bus	-.12	.11	-.06	.17	.06	.48	.04	.08	.09	.17	.13	.38
PSAT-V	.21	.05	.17	.06	.19	-.39	.14	.16	.06	.01	-.28	-.16
PSAT-M	.16	.04	.10	.27	.10	-.29	.17	.14	.02	.13	-.19	-.15
Mean	4.11	3.89	3.75	3.33	3.58	3.69	3.39	3.81	3.83	2.21	4.00	3.28
S.D.	.97	.93	1.07	1.40	1.09	1.28	1.16	1.14	1.21	1.18	1.06	1.10

measure and that almost all of them provide information (relevant or otherwise) that is somewhat different from a single rating of interest in an area. Another difference that may be worth noting is the pattern of mean scores on self-rated interests. The AIM means, as indicated in Table 8, show males below the "indifference level" (16) in Eng, Art, F Lang, Mus and Home Ec. The AIM means for females are below 16 in Bio, Math, P Sci, and Ind Art.

Means on the self-ratings of interests in these subject fields (Tables 12a and 12b) seem consistently to exceed the "indifference level" (a score of 3 on a 5-point scale). For the males, ratings of interest in Secretarial, Foreign Language, and Home Economics fields fall below 3.00. For the females, only the mean rating on Industrial Arts is below this "indifference level." Even more remarkable is the very high rating given to interest in Biology. The mean ratings by both males and females place Biology at a higher level of interest than any other field. Yet the AIM means for Biology (Table 8) are 17.30 for males and 15.58 for females. We have no convincing explanation for these phenomena. That they are not attributable to sampling error is borne out later, in the discussion of Tables 18a and 18b.

Sex, Ability, SES, and Other Variables. Sex, ability level, and curriculum membership clearly bear a logical relationship to academic interests. In our previous discussion of AIM scale score distributions it was pointed out that sex and ability level, but not SES, affect AIM distributions. Further indication of these relationships is provided by the correlations in Tables 13a and 13b. For males, the highest correlation found between any AIM scale and SES (as defined in Figure 2) was .14 (SES and Social Sciences) and for females the highest correlation found was -.26 (SES and Secretarial). These low correlations, in conjunction with the AIM distributions, support the conclusion that AIM scales are virtually independent of SES. This is a somewhat unexpected but welcome finding,

for it allows guidance counselors to make normative interpretations of a student's AIM scores without inquiring about the educational and occupational status of his parents.

The relationships between interests and ability exhibit a greater complexity. For many of the AIM scales we find only slight differences between distributions for students grouped according to ability level, and the AIM-PSAT correlations also tend to be low. (See Table 8.) In other words, we can say that some academic interests appear to be independent of ability. In other instances, as in the case of AIM English, we find considerable differences between the scale score distributions for the High and the Middle or Low ability groups (see Figure 3), as well as correlations of .27 and .28 with PSAT-V.

Two other variables derived from the Student Questionnaire, "Definiteness of vocational plans" (item 6, labeled PLANS) and "Curriculum consistency" (based on items 4 and 5, labeled Cur C) fail to show any evidence of a linear relationship with AIM scales (see Tables 13a and 13b). A third set of variables, concerned with "Occupational opportunities" (scores A - D, Table 13a and 13b) exhibit low to moderate correlations with AIM scales. Since these item scores are not independent, being based on rankings, the overall pattern is difficult to interpret. In view of the absence of any sizable positive correlations, however, it seems safe to infer a lack of positive linear relationship between AIM and (A) opportunity to work with ideas, (B) opportunity to work with people, (C) opportunity to work with things, and (D) opportunity to be a leader. ("Ideas," "people," and "things" will be recognized as the three interest areas according to which occupations are characterized in the Dictionary of Occupational Titles.)

For both males and females, the number of years of post-secondary schooling planned (item 28, labeled YRS) exhibits moderate positive correlations with PSAT-V and PSAT-M and slightly lower correlations with four AIM scales--Mathematics, Social Sciences, Physical Science and Foreign Language--all of which represent subjects usually required by liberal arts colleges. For males only, a correlation of similar magnitude is also found between this variable and English. For females only, a somewhat larger negative correlation is also found between this variable and AIM Secretarial ($r = -.35$). Again, this pattern of relationships seems logically consistent.

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Insert Tables 13a and 13b about here

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Project TALENT Information Scales. Of the 20 spiraled forms of the Student Questionnaire, 10 contained 11 to 12 items from subscales of Project TALENT Information tests.

Once again we hoped to find AIM scales relating more highly with corresponding information areas than with less similar areas. In addition, we expected to find the information-interest correlations generally low--specifically, lower than the correlations between information and ability scores.

The correlations of AIM scales with the information scales derived from Project TALENT (Tables 14a and 14b) are, for the most part, as low as we had anticipated. For males, the highest positive correlation was for Mathematics Information with AIM Mathematics ($r = .36$); for females, the highest positive correlations were for Social Studies Information with AIM Social Sciences and for Physical Science Information with AIM Foreign Language ($r = .28$).

Table 13a

Correlations between AIM, PSAT, and Several Student Questionnaire Variables

(Males)

AIM Scales	SES	PLANS	YRS	Score A	Score B	Score C	Score D	Cur C
Bio	-.01	.06	.12	.07	-.03	-.01	-.03	-.01
Eng	.12	.08	.28	.13	.08	-.31	.14	.06
Art	-.04	.04	.01	.05	.00	-.02	-.05	-.05
Math	.07	.05	.26	.21	-.10	-.11	.00	.14
Soc Sci	.14	.05	.25	.09	.08	-.29	.14	.07
Sec	-.08	-.03	-.05	-.11	.12	-.09	.10	-.07
P Sci	.06	.06	.20	.21	-.14	-.04	-.04	.08
F Lang	.05	.05	.23	.09	.08	-.22	.08	.02
Mus	.01	.08	.19	.06	.06	-.15	.05	-.02
Ind Art	-.09	.04	-.08	.02	-.14	.20	-.10	.00
Home Ec	-.08	.03	-.02	-.04	.05	-.04	.03	-.07
Bus	.03	.01	.12	-.01	.11	-.23	.16	.02
PSAT-V	.37	.05	.44	.26	-.09	-.17	.00	.35
PSAT-M	.35	.04	.44	.25	-.10	-.13	-.02	.37
Mean	3.01	2.61	2.96	2.39	2.99	2.46	2.17	4.18
S.D.	1.28	1.13	.82	1.05	.96	1.16	1.12	1.19

Table 13b

Correlations between AIM, PSAT, and Several Student Questionnaire Variables

(Females)

AIM Scales	SES	PLANS	YRS	Score A	Score B	Score C	Score D	Cur C
Bio	.03	.06	.19	.10	-.08	-.04	-.01	.02
Eng	.13	.11	.13	.12	.00	-.23	.12	.09
Art	.09	.03	.09	.06	-.07	-.02	.01	.04
Math	.01	.04	.23	.13	-.07	-.10	.02	.05
Soc Sci	.10	.07	.25	.14	.00	-.20	.07	.07
Sec	-.26	.02	-.35	-.16	.05	.09	.02	-.16
P Sci	.04	.05	.25	.18	-.12	-.09	.00	.03
F Lang	.08	.08	.26	.07	.00	-.16	.09	.09
Mus	.07	.08	.19	.07	-.02	-.11	.06	.03
Ind Art	.02	.01	.08	.05	-.11	.04	-.02	-.02
Home Ec	-.15	.07	-.16	-.08	.06	.03	.01	-.08
Bus	-.16	.07	-.16	-.04	.01	-.04	.07	-.10
PSAT-V	.38	.02	.40	.12	-.01	-.10	-.01	.35
PSAT-M	.35	.01	.39	.12	-.03	-.08	-.01	.33
Mean	2.96	2.90	2.70	2.33	3.71	2.13	1.82	4.24
S.D.	1.31	1.05	.75	.89	.61	.94	.93	1.12

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Insert Tables 14a and 14b about here

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In spite of the low relationship between the AIM scales and the Information scales, AIM generally correlates more highly with appropriate Information areas than with inappropriate areas. A summary of these relationships is presented in Table 15.

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Insert Table 15 about here

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Correlations between the Project TALENT Information scales and PSAT (Tables 14a and 14b) are generally in the moderate to high range (median correlation is about .6 with PSAT-V and about .5 with PSAT-M), while correlations between AIM scales and PSAT are generally low. It is particularly noteworthy that even the nonacademic information scales show substantial relationships with PSAT. These relationships provide evidence that AIM is more nearly independent of measured ability than an information test. They corroborate a similar finding by Skager, Bussis and Schultz (1965) that other information tests overlapped with ability to a much greater extent than AIM did.

Nonclassroom Activities. The pattern of relationships between AIM scales and scores based on frequency of participation in an array of nonclassroom activities adds yet another brick in building up the foundation of AIM's construct validity (see Tables 16a and 16b). Once again, we find AIM

Table 14a

Correlations between AIM, PSAT and Project TALENT Information Scales

(Males)

AIM Scales	Information Scales: Literature	Music	Social Studies	Mathematics	Physical Science	Electricity	Home Economics	Mechanics	Art	Biology
Bio	-.04	.01	.04	.00	.04	.07	.04	.01	.02	.16
Eng	.14	.15	.22	.20	.11	.05	.14	-.08	.26	.16
Art	-.11	-.00	-.11	-.11	-.09	-.01	-.00	-.09	.16	.00
Math	-.08	.11	.18	.36	.22	.20	.09	.09	.05	.15
Soc Sci	.11	.07	.30	.16	.10	-.07	.08	-.09	.27	.11
Sec	-.15	-.13	-.14	-.15	-.09	-.19	-.04	-.24	-.09	-.18
P Sci	.08	.15	.14	.21	.28	.25	.09	.09	.14	.26
F Lang	.08	.02	.13	.13	.07	.02	.11	-.00	.17	.09
Mus	.06	.17	.03	.04	.02	-.04	.07	-.12	.09	.08
Ind Art	-.12	.06	-.08	-.10	.07	.16	.02	.13	-.07	.08
Home Ec	-.19	-.12	-.14	-.14	-.13	-.10	.02	-.20	-.06	-.00
Bus	-.08	-.03	.09	.01	.01	-.07	.06	-.10	.07	-.05
PSAT-V	.65	.62	.64	.68	.65	.43	.35	.44	.62	.59
PSAT-M	.50	.57	.59	.77	.66	.42	.32	40	.52	.54
Mean	6.84	5.76	8.01	5.53	7.16	5.78	4.63	7.52	7.11	7.04
S.D.	2.46	2.54	2.80	3.05	2.77	2.60	1.81	2.24	2.49	2.22

(Females)

AIM Scales	Information Scales: Literature	Music	Social Studies	Mathematics	Physical Science	Electricity	Home Economics	Mechanics	Art	Biology
Bio	.04	.03	.09	-.04	.11	.02	.04	.03	-.05	.13
Eng	.27	.19	.19	.16	.20	.08	.11	-.02	.12	.17
Art	.24	.04	.08	.08	.17	.07	.10	-.03	.22	.14
Math	.07	.04	.06	.26	.17	.09	.01	.03	-.04	.06
Soc Sci	.18	.11	.28	.05	.23	.03	.05	-.00	.06	.10
Sec	-.26	-.26	-.29	-.25	-.29	-.14	-.19	-.15	-.27	-.23
P Sci	.16	.04	.07	.07	.20	.05	.08	.06	.02	.07
F Lang	.23	.16	.22	.24	.28	.04	.14	.05	.08	.20
Mus	.23	.18	.12	.07	.17	.04	.07	.03	.07	.06
Ind Art	.17	-.01	-.01	.01	.05	.04	.03	.05	.08	.04
Home Ec	-.21	-.25	-.16	-.16	-.11	-.15	.01	-.07	-.20	-.12
Bus	-.17	-.17	-.14	-.16	-.15	-.11	.10	-.03	-.20	-.16
PSAT-V	.68	.62	.62	.66	.69	.34	.47	.27	.59	.55
PSAT-M	.54	.50	.55	.77	.63	.32	.42	.25	.48	.48
Mean	6.75	6.07	7.45	4.77	5.25	3.47	6.76	4.80	7.20	6.40
S.D.	2.47	2.47	2.64	2.70	2.68	1.73	2.34	1.86	2.48	2.18

Table 15

Correlations between AIM Scales and Information Scales

AIM Scales	Correlation with Similarly Titled Project TALENT Information Scale		
		Males	Females
Bio	Biology	.16	.13
Eng	Literature	.14	.27
Art	Art	.16	.22
Math	Mathematics	.36	.26
Soc Sci	Social Studies	.30	.28
P Sci	Physical Science	.28	.20
Mus	Music	.17	.18
Ind Art	Mechanics	.13	.05
Home Ec	Home Economics	.02	.01

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Insert Tables 16a and 16b about here

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generally exhibiting near zero correlations with inappropriate activities and somewhat higher to moderate correlations with activities logically related to each scale. A summary of these relationships is outlined in Table 17.

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Insert Table 17 about here

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None of the activities correlates with PSAT greater than .20 for both males and females, although for the males one activity--sewing--has a correlation with PSAT-V of -.22.

Parenthetically, the mean scores for the activities (presented in next to the last row of Tables 16a and 16b) suggest that none of the 12 nonclassroom activities listed is notably popular. For the males, only one has a mean value of $\geq$ 3.0 (corresponding to the participation response category "occasionally"), and that activity is "raising or caring for animals or pets." For the females, two activities have a mean value of $\geq$ 3.0--caring for pets and cooking. These data indicate that students spend little time outside of school participating in the hobbies or leisure time activities included in the questionnaire.

Specific School Subjects. Two of the 20 different forms of the Student Questionnaire contained an array of specific school subjects for which students were to indicate their level of interest. Correlations between all of these school subjects and AIM scales are found in Tables 18a and 18b.

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Insert Tables 18a 8b about here

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Table 19 selects some of these correlations to highlight relationships between AIM scales and subjects which seem logically relevant to them. In general, the scale

Table 16a

Correlations between AIM, PSAT, and Nonclassroom Activities

(Males)

AIM Scales	Nonclassroom Activities: Drawing	Collecting Stamps	Model Building	Photography	Electrical Equipment	Wood Working	Raising Pets	Sewing	Cooking	Auto Repair	Gardening	Doing Word Puzzles
Bio	.10	.13	.01	.06	.10	.14	.17	.02	.08	-.03	.22	.14
Eng	.12	.03	-.08	.01	.01	-.10	-.01	.09	.02	-.20	-.03	.24
Art	.53	.01	.10	.07	.07	.08	-.02	.17	.12	-.06	.06	.14
Math	.04	.14	-.01	.11	.11	.05	-.03	-.02	-.05	-.06	.10	.26
Soc Sci	-.02	.08	-.12	-.02	-.02	-.11	-.04	.01	-.03	.20	-.01	.19
Sec	.05	.04	-.07	.02	.03	-.02	.02	.15	.10	-.04	.15	.13
P Sci	.13	.20	.12	.20	.20	.04	-.02	-.03	.04	.01	.08	.19
F Lang	.04	.02	-.12	-.08	-.08	-.09	-.03	.06	.06	-.24	.02	.19
Mus	.23	.05	.05	.14	.04	-.08	.02	.06	.11	-.11	.04	.20
Ind Art	.29	.09	.24	.05	.37	.33	.00	.04	.11	.33	.13	.10
Home Ec	.15	.09	.02	.12	.10	.19	.09	.25	.38	.02	.22	.20
Bus	.02	.04	-.13	.13	.01	-.03	-.05	.14	.03	-.12	.12	.17
PSAT-V	-.10	.05	-.06	-.04	-.00	-.20	-.07	-.22	-.12	-.13	-.08	.04
PSAT-M	-.11	.12	-.04	.02	.03	-.16	-.06	-.15	-.10	-.11	-.00	.16
Mean	2.3	2.3	2.4	1.5	2.3	2.3	3.3	1.2	2.5	2.8	2.1	2.5
S.D.	1.1	1.2	1.2	.9	1.2	1.2	1.5	.6	1.1	1.3	1.2	1.0

Table 16b

Correlations between AIM, PSAT, and Nonclassroom Activities

(Females)

AIM Scales	Nonclassroom Activities: Drawing	Collecting Stamps	Model Building	Photography	Electrical Equipment	Wood Working	Raising Pets	Sewing	Cooking	Auto Repair	Gardening	Doing Word Puzzles
Bio	.04	.24	.07	.13	.09	.08	.24	.10	.09	.09	.23	.10
Eng	.20	.09	.07	.14	.02	.07	.03	.10	.14	.03	.23	.19
Art	.57	.07	.10	.08	.12	.13	.13	.14	.06	.17	.14	.10
Math	.01	.04	.04	-.02	.01	.03	.05	.04	.03	.01	.04	.16
Soc Sci	.01	.06	.04	.14	.04	.03	.11	.05	.04	.05	.13	.13
Sec	-.13	.07	.02	.04	.04	.05	.06	.11	.14	-.02	.13	.01
Sci	.07	.21	.14	.15	.11	.06	.20	.06	.04	.11	.19	.08
F Lang	.10	.02	.01	.03	-.01	.02	.02	.04	.07	-.04	.13	.16
Mus	.06	.10	.01	.13	.02	.05	.09	.09	.08	-.03	.25	.13
Ind Art	.27	.11	.18	.04	.29	.14	.10	.11	.06	.19	.15	.07
Home Ec	-.06	.07	-.03	.09	-.01	.09	.12	.27	.36	-.07	.29	.08
Bus	-.06	.09	.07	.11	.06	.06	.10	.07	.11	-.01	.15	.07
PSAT-V	.12	-.06	-.00	-.13	-.08	-.04	-.01	-.07	-.15	-.05	-.14	.08
PSAT-M	.07	-.04	-.05	-.10	-.05	-.07	-.02	-.02	-.15	-.01	-.13	.11
Mean	2.8	1.0	1.2	1.3	1.2	1.1	3.5	2.7	4.1	1.2	2.4	2.9
S.D.	1.2	1.1	.5	.8	.5	.5	1.4	1.1	1.0	.5	1.1	1.0

Table 17

Correlations between AIM Scales and Nonclassroom Activities

AIM Scales	Activity Correlating Highest with AIM (> $\pm$ .20)	
	Males	Females
Bio.	Gardening (.22)	Raising Pets (.24)
Eng.	Doing Word Puzzles (.24)	Gardening (.23)
Art	Drawing (.53)	Drawing (.57)
Math	Doing Word Puzzles (.26)	-----
P Sci	-----	Collecting Stamps (.21)
F Lang	Auto Repair (-.24)	-----
Mus	Drawing (.23)	Gardening (.25)
Ind Art	Elec. Equip. (.37)	Elec. Equip. (.29)
Home Ec	Cooking (.38)	Cooking (.36)

Table 18a

Correlations between AIM, PSAT, and Self-rated Interest in School Subjects

(Males)

AIM Scales	School Subject: Physics	Chemistry	Biology	Algebra	French	Art Appreciation	Bookkeeping	English (D3)	European History	Shop	Retailing	Social Science
Bio	.24	.32	.41	.06	.02	.07	-.04	.10	.25	.12	-.04	.18
Eng	.44	.28	.22	.17	.29	.20	.15	.47	.32	-.20	.22	.36
Art	.29	.20	.14	.11	.22	.58	.10	.15	.12	.11	.23	.13
Math	.46	.33	.13	.64	.12	.11	.33	.14	.14	.04	.11	.15
Soc Sci	.36	.22	.25	.14	.33	.11	.21	.32	.46	-.19	.29	.37
Sec	.04	.09	.10	.13	.28	.11	.49	.17	.08	.11	.40	.21
P Sci	.53	.54	.41	.21	.08	.19	.04	.11	.26	.08	.09	.24
F Lang	.38	.24	.25	.12	.50	.28	.27	.30	.26	-.12	.17	.14
Mus	.20	.24	.19	.10	.37	.33	.07	.19	.13	-.03	.17	.14
Ind Art	.30	.28	.13	.17	-.02	.27	-.01	-.01	.01	.45	.20	.09
Home Ec	.18	.17	.15	.08	.21	.26	.09	.21	.12	.17	.34	.22
Bus	.15	.08	.16	.17	.32	.19	.41	.32	.26	.00	.35	.34
PSAT-V	.33	.26	.11	.16	.15	-.01	-.16	.09	.18	-.31	-.09	.06
PSAT-M	.39	.30	.04	.30	.08	-.00	-.15	-.01	.13	-.24	-.04	-.03
Mean[a]	3.94	4.12	4.24	3.81	3.50	3.84	3.81	3.69	4.00	4.36	3.67	3.92
S.D.	1.08	.92	.83	1.01	1.04	1.02	1.11	.93	.93	.89	1.01	.89

[a]The scale runs from 2-5, with the score 1 indicating "Have never taken a course in this subject." Therefore, a score of 3.5 represents the indifference level.

Table 18a (cont'd)

AIM Scales	School Subject: Earth Science	Spanish	Typing	American History	Geometry	Business Arithmetic	Music Appreciation	Trigonometry	English (D4)	General Science	Civics	Shorthand
Bio	.36	.09	.15	.11	.16	.19	-.05	.10	.18	.32	.19	-.06
Eng	.19	.21	.06	.29	.21	-.01	.31	.39	.41	.18	.22	-.13
Art	.04	.10	.06	.01	.02	.05	.21	.09	.08	.08	.05	-.02
Math	.21	.22	.20	.14	.58	.34	.04	.60	.20	.17	.21	.05
Soc Sci	.16	.16	.05	.42	.20	.06	.11	.35	.25	.12	.42	-.12
Sec	-.05	.04	.30	.09	-.01	.24	.06	.08	.12	-.00	.15	.07
P Sci	.39	.09	.15	.14	.32	.15	.05	.32	.17	.38	.18	-.02
F Lang	.19	.45	.17	.22	.16	.00	.18	.25	.33	.05	.18	-.14
Mus	.14	.12	.08	.11	.14	.02	.61	.20	.14	.16	.11	-.04
Ind Art	.12	.02	.10	.02	.14	.24	.08	.18	-.03	.20	.16	-.08
Home Ec	.05	.18	.18	.14	.03	.14	.17	.13	.13	.04	.14	.28
Bus	.07	.13	.22	.26	.11	.26	.12	.30	.20	.11	.36	.09
PSAT-V	.26	.27	-.04	.14	.27	-.11	.05	.52	.07	.15	.11	.02
PSAT-M	.20	.21	-.04	.11	.39	-.06	.01	.58	.00	.16	.10	-.02
Mean[a]	4.03	3.47	3.77	4.27	4.02	3.78	3.49	3.90	3.74	4.11	3.92	3.38
S.D.	.82	1.06	.92	.77	.98	.94	1.13	1.12	.89	.81	.91	1.19

[a]The scale runs from 2-5, with the score 1 indicating "Have never taken a course in this subject." Therefore, a score of 3.5 represents the indifference level.

Table 18b

Correlations between AIM, PSAT, and Self-rated Interest in School Subjects

(Females)

AIM Scales	School Subject											
	Physics	Chemistry	Biology	Algebra	French	Art Appreciation	Bookkeeping	English (D3)	European History	Home Ec.	Retailing	Social Science
Bio	.18	.24	.44	.07	.03	.07	-.04	.00	.11	.02	-.28	.30
Eng	.09	.17	.17	.09	.17	.19	-.11	.42	.31	-.07	.18	.27
Art	.20	.01	.10	.04	.13	.67	.05	.09	.21	-.04	-.04	.09
Math	.58	.27	.03	.58	.21	-.00	.28	.05	-.02	.09	-.04	.09
Soc Sci	.05	.14	.23	.12	.15	-.04	.07	.22	.41	-.11	.08	.32
Sec	-.02	-.11	.05	.03	.16	-.08	.57	.04	-.12	.31	.40	-.06
P Sci	.30	.41	.35	.14	.07	.05	.02	.02	.17	-.06	-.22	.26
F Lang	.31	.17	.17	.14	.48	.21	.03	.26	.25	-.04	-.13	.18
Mus	.20	.14	.20	.12	.20	.15	.04	.17	.21	-.07	-.07	.22
Ind Art	.14	.14	.10	.10	.03	.21	-.06	-.06	.05	-.07	.07	.02
Home Ec	-.06	-.14	-.05	-.04	.05	.00	.04	.03	-.10	.34	.22	-.00
Bus	-.09	-.14	.03	.05	.20	-.08	.43	.11	.00	.12	.54	.09
PSAT-V	-.21	.34	.15	.07	.24	.11	-.11	.12	.20	-.24	-.19	.15
PSAT-M	-.16	.27	.04	.26	.19	-.00	-.12	.08	.06	-.20	-.23	.03
Mean[a]	3.68	4.04	4.36	3.84	4.26	4.14	4.25	4.23	3.99	4.31	3.53	3.85
S.D.	1.12	.86	.76	1.00	.83	.94	.85	.79	.94	.83	1.16	.90

[a]The scale runs from 2-5, with the score 1 indicating "Have never taken a course in this subject." Therefore, a score of 3.5 represents the indifference level.

Table 18b (cont'd)

AIM Scales	School Subject: Earth Science	Spanish	Typing	American History	Geometry	Business Arithmetic	Music Appreciation	Trigonometry	English (D4)	General Science	Civics	Shorthand
Bio	.31	.10	-.04	.06	.16	-.13	.10	.30	.16	.42	-.00	.07
Eng	.14	.19	-.05	.28	.13	.03	.24	-.10	.43	.10	.23	.05
Art	.12	.11	-.04	.04	.05	-.10	.12	.10	.09	.06	.07	-.06
Math	.11	.08	.00	.09	.62	.42	.02	.75	.12	.15	.17	.00
Soc Sci	.25	.10	-.05	.43	.09	-.02	.22	-.02	.26	.20	.44	.06
Sec	-.14	.06	.35	-.16	-.02	.22	-.03	.01	-.04	-.16	-.06	.15
P Sci	.44	.04	-.09	.10	.27	-.05	.15	.41	.17	.49	.04	-.00
F Lang	.10	.45	-.05	.11	.04	-.02	.21	.16	.27	.06	.13	.20
Mus	.19	.12	-.02	.18	.18	-.04	.58	.08	.20	.19	.09	.01
Ind Art	.14	.04	-.07	.02	.25	.02	-.01	.31	.05	.16	.11	-.07
Home Ec	-.01	.08	.12	.01	.02	.09	.06	.24	.08	.04	-.01	.19
Bus	-.04	.21	.19	-.01	.07	.30	.06	.29	.11	-.02	.11	.11
PSAT-V	.18	.10	-.15	.17	.10	-.07	.01	.06	.13	.17	.12	.06
PSAT-M	.10	.03	-.16	.11	.31	-.02	-.05	.25	.04	.08	.03	-.00
Mean[a]	3.79	4.11	4.46	4.16	3.85	3.93	4.15	3.87	4.28	3.92	3.86	4.38
S.D.	.84	.94	.70	.86	1.05	.91	.93	1.14	.74	.85	.93	.84

[a]The scale runs from 2-5, with the score 1 indicating "Have never taken a course in this subject." Therefore, a score of 3.5 represents the indifference level.

for each field appears to be about equally correlated with the various subjects in that field. For example, the Mathematics scale correlations with Algebra, Trigonometry, and Geometry are all quite high, and the Social Science scale yields correlations with European History, Civics, and American History that are all in the .40's. Thus each scale seems to be about equally representative of most of the subjects generally classified in its field.

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Insert Table 19 about here
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The forms of the questionnaire (coded D3 and D4) which provided data for Tables 18 and 19 may seem redundant, since another form of the questionnaire (coded D5) obtained students' self-rated interests in the fields purportedly represented by AIM scales.

Differences between these forms of the questionnaire are, however, worth noting. Form D5 (which provided data for the correlations reported in Tables 12a and 12b) asked students to indicate interest in a field even if they had not taken any course in that field (see Appendix A, D5, page 3: "If there are fields with which you are not familiar, answer according to whether you would like to take a course in them.") A five-point response scale was used, ranging from "Very interesting" (5) to "Very uninteresting" (1). As mentioned in connection with Tables 12a and 12b, the items corresponded to the titles then in use for the AIM scales, and were designated as "fields of study."

Form D3 and D4, on the other hand, appeared to ask about interest in school subjects actually taken, since the five response options included a four-point scale ranging from "Very interesting" (5) to "Not interesting at all" (2), along with the option, "Have never taken a course in this subject" (scored 1, but of course deleted from the computation of correlations). The items in D3 and D4, as indicated in Tables 18 and 19, were usually more specific course titles rather

Table 19

Correlations between AIM Scales and Self-rated Interest in Similar Subjects

AIM Scales	School Subject(s)	Males	Females
Bio	Biology	.41	.44
	General Science	.32	.42
Eng	English (D3)	.47	.42
	English (D4)	.41	.43
Art	Art Appreciation	.58	.67
Math	Algebra	.64	.58
	Trigonometry	.60	.75
	Geometry	.58	.62
	Business Arithmetic	.34	.42
Soc Sci	European History	.46	.41
	Civics	.42	.44
	American History	.42	.43
	Social Sciences	.37	.32
Sec	Bookkeeping	.49	.57
	Retailing	.40	.40
	Typing	.30	.35
	Shorthand	.07	.15
P Sci	Chemistry	.54	.41
	Physics	.53	.30
	Earth Science	.39	.44
	General Science	.38	.49
F Lang	French	.50	.48
	Spanish	.45	.45
Mus	Music Appreciation	.61	.58
Ind Art	Shop	.45	-.07
Bus	Retailing	.35	.54
	Bookkeeping	.41	.43

than the field titles used in D5--for example, Physics, Chemistry, Earth Science, and General Science appear as items in D3 and D4, compared with the item Physical Science in D5.

These differences between the questionnaire forms notwithstanding, the mean ratings of interest in subjects seem to follow the same pattern as the mean ratings of interest in fields of study. Since the means in Tables 18a and 18b represent ratings by students who had actually taken the subjects rated, we may expect some effect attributable to self-selection in some of the subjects. Indeed, the only means that fall below the "indifference level" (in this case, 3.5) are Spanish and Shorthand for males. Again, as in Tables 12a and 12b, the mean ratings for Biology suggest that it is regarded as one of the most interesting subjects by males and females alike. Since questionnaire forms D5 (which provided the data for Tables 12a and 12b) and D3 (which provided the data for Tables 18a and 18b) were filled out by different 5% samples of the study population, it is difficult to avoid the inference that the AIM Biology scale is in some respects not an adequate representation of Biology interest as perceived by high school juniors. Despite the usual moderate level of correlations between the Biology scale and ratings of interest in Biology, the scale items seem to be distinctly less popular than the global ratings would lead us to expect.

The pattern of correlations in Tables 18 and 19 is also quite similar to those presented in Tables 12a and 12b. Earlier, in discussing Tables 12a and 12b, we raised the question of pitting each 16-item AIM scale against a single question about interest in the field represented by that scale. Certainly, the relative economy of a one-item scale is desirable, if relevant information

is not sacrificed (cf. Pinsleur, 1963, who discarded a 20-item foreign language interest inventory in favor of a five-point rating on a single question). This comparison between one-item ratings and 16-item scales will be pursued assiduously in a forthcoming publication on predictive validities.

In the meantime, it seems reasonable to hypothesize that items like those in AIM--straightforward statements of activities commonly encountered in various subject fields in high school--cannot be expected to provide a "better" measure of a student's interest in a field than the student's rating of interest, provided the student has had representative experience in that field. For example, if a student has taken several years of French, one hardly needs an array of 16 items, such as "To speak a foreign language," "To write in a foreign language," and "To learn the grammar of a foreign language," in order to help him assess his interest in French. It should suffice to ask him, once, to rate his degree of interest in the experience. Of course, his experience may or may not be representative. Yet such a rating would probably be the best criterion by which to judge the predictive validity of an academic interest inventory administered prior to his exposure to the course. The correlations between appropriate AIM scales and Art Appreciation, Algebra, Trigonometry, Geometry, and Music Appreciation are around .6 for males and females, but most of the other correlations fall in the .40's (Table 19). In a prediction study, correlations of such a magnitude would seem to suggest quite impressive validity for AIM. Table 19, however, represents concurrent validity, since AIM and the ratings were filled out at about the same time. These correlations, then, may be regarded as an upper bound on what may be expected from AIM in the prediction of interest in various subjects at the high school level. One must expect still lower validities in predicting interest in college courses.

SUMMARY AND DISCUSSION

In the fall of 1966, juniors in a national sample of secondary schools completed answer sheets for the Academic Interest Measures (AIM), the Preliminary Scholastic Aptitude Test (PSAT), and an extensive questionnaire. Major purposes were to compile norms for PSAT (previously published) and for AIM (Appendix D), to examine the structure of the AIM scales and their relationships with other variables, to calculate reliability coefficients for AIM, and to lay the groundwork for studies of predictive validity reaching through grade 12 and the following year. At the same time, sophomores in 11 of the schools also took AIM. They were retested one year later in five of these schools, and two years later in the other six schools, in order to obtain coefficients of stability for AIM over one-year and two-year intervals.

Statistics for the sample of secondary schools were compared with data on the population of secondary schools published by the U. S. Office of Education, such as geographical location, proportion of public schools, college-going rates, size of enrollments, and instructional expenditures. Although the USOE population data were compiled several years before 1966, the characteristics of the sample appeared to jibe quite well with the USOE parameters. Indeed, norms weighted to reflect the frequency of each category of school in the USOE population turned out to be virtually indistinguishable from unweighted norms based directly on the data obtained from the sample. In short, the sample of participating schools seemed sufficiently representative to warrant generalizations from the findings.

The total norms group for AIM consists of about 15.5 thousand juniors, almost equally divided between males and females, who completed all measures administered in grade 11. The size of this group permitted subgroupings according to sex, ability, curriculum, and socioeconomic status (SES). While

distributions for a number of the AIM scales varied markedly according to sex, ability, and curriculum, SES was found to have no substantial effect. Pooling the three SES categories and eliminating all subgroups with fewer than 100 members reduced the number of norms subgroups to 30. Effects of ability could be distinguished mainly between High ability on the one hand (the upper third of the sample, defined by PSAT-V score range 40-80) and Low and Middle ability on the other hand (the lower two-thirds, defined by PSAT-V score ranges of 20-29 and 30-39, respectively). It may, therefore, be expedient in the future to reduce the number of norms groups further by pooling Middle and Low ability students.

In general, the AIM scales seem to represent a domain quite distinct from academic ability as defined by the PSAT. Correlations between AIM and PSAT tend to be quite low, the most noteworthy exception being the correlation of .52 between AIM Mathematics and PSAT-M for females. The next highest AIM-PSAT correlation is .39 between the same two variables for males. The only other correlation between an AIM scale and PSAT to reach as high as .3 is the negative relationship between AIM Secretarial and PSAT-V for females (-.34).

The relationships among AIM scales are generally moderate to low, tending to define such logical clusters as science and technology interest and liberal arts interest. High correlations between the Secretarial and Business scales for both sexes (about .7) suggest that these scales might well be merged into a single Business scale, especially since the Secretarial scale correlates higher with students' ratings of interest in Bookkeeping and in Retailing than in Typing and in Shorthand (Table 19). This, however, would reverse the decision made by French (1964b), when he found that sex differences were confounding the item analyses for the single Business scale in the Interest Index: he then expanded two clusters of items into the scales he called Secretarial and Executive.

The structure of academic interests seems remarkably similar for males and females. A five-factor solution to a maximum likelihood factor analysis

provides a very clear and simple structure for females. The factors are readily identified as Ability and four interest factors--Business, Mathematics, Science, and Liberal Arts. The structure for males is almost--but not quite--identical with that found for females. Ability and the interest factors Business, Science, and Liberal Arts emerge again quite distinctively, but both the Ability and Science factors load somewhat on the Mathematics interest scale; Mathematics interest does not appear as a separate factor. A factor that loads on AIM Art, Music, Industrial Arts, and Home Economics does appear for the males, and we have called it Non-academic interest. The strong similarity in structure of interests for males and females is especially noteworthy in view of the great disparities between the sexes in score distributions on the AIM scales.

Internal consistencies (coefficient alpha) of the AIM scales in grades 10, 11, and 12 are quite high (about .9). Three-week test-retest stabilities cluster around .86, but one-year stabilities fall off to about .7, and two-year stabilities drop to about .6.

From these data on structure and reliability, it seems plausible to infer that the AIM scales measure quite meaningful dimensions in a distinctive domain and that academic interests as measured by AIM are still somewhat fluid in 10th grade. Thus the measures may be regarded as sensitive to additional academic experience.

In general, AIM relationships with other variables in the student questionnaires are consistent with the kind of content that each scale purports to incorporate. AIM scales tend to have moderate correlations with students' ratings of their own interests in fields and specific subjects logically corresponding to the AIM scales, and markedly lower correlations with ratings of other fields and subjects. Some unexplained differences are found between the level of AIM means for the Biology scale and students' mean ratings of interest in Biology. AIM means are near the "indifference level," whereas ratings of interest in Biology are very high. This is the most striking

instance of a general tendency for ratings to suggest greater interest in fields and subjects than AIM scores might suggest.

AIM scales appear to be essentially uncorrelated with definiteness of occupational plans, with curriculum consistency (the latter is moderately related to PSAT scores), or with preferences for opportunity to work with ideas, people, things (the interest rubrics used in the Dictionary of Occupational Titles) or to be a leader. Years of post-secondary education planned yield moderate correlations with PSAT and slightly lower correlations with AIM scales that represent subjects usually required by liberal arts colleges--Mathematics, Social Sciences, Physical Sciences, Foreign Language, and (for males) English.

Although groups of items borrowed from Project TALENT Information scales yield generally low correlations with AIM, "appropriate" relationships are consistently higher than "inappropriate" ones. The Information scales (even the nonacademic ones) are much more highly correlated with PSAT, suggesting that they are closer to the ability than to the interest domain, at least in a sample of high school juniors. Previous attempts to measure interests by means of information tests have produced similar findings. AIM scales also show higher correlations with frequency of participation in nonclassroom activities that logically seem "appropriate" than with logically "inappropriate" ones.

In general, then, the psychometric properties and evidence for construct validity of AIM suggest that it may function well (as its forebear did in the Eight-Year Study) as a criterion measure. The Interest Index was developed and used for the Eight-Year Study (Smith & Tyler, 1942) primarily "to evaluate interests as objectives--as outcomes rather than as starting points of the educative process." A major concern in that study was to compare effects of different types of curricula. One such effect was the range and magnitude of students' interests.

Criteria in addition to achievement are currently again receiving a great deal of attention in evaluating educational treatments. AIM has a number of advantages for such use as a criterion: national norms for 11th grade, with various subgroupings; a clearly defined structure, independent of ability; high coefficients of internal consistency and short-term stability, but sensitivity to change over one-year and two-year periods; and considerable evidence of construct validity. The major counterindication is the finding that concurrent validities--correlations between AIM scales and students' ratings of interest in subjects actually taken--are often only of moderate size. (The discrepancy between mean scores on AIM Biology and the students' high rating of Biology is also troublesome here. One possible interpretation of this discrepancy would be to question whether the AIM Biology scale is up-to-date. Perhaps the items do not describe current activities in Biology courses, although moderately correlated with them.)

This one counterindication for use of AIM as a criterion instrument may of course also loom as a threat to its predictive validity. We had theorized that representative experience in a field should serve as the best predictor of later interest in a course in that field. Certainly, reacting to the interest inventory items seems like an inferior substitute for that experience. Furthermore, the length of most interest scales and the dullness of the items make them tedious to the respondent. For many students, the classification scheme for the items is transparent, and such students may resent the Pecksniffian interrogation that requires them to respond 16 times per scale instead of once. So the single question and rating should suffice for the student who has had adequate and representative experience. If, however, a student has had insufficient opportunity to acquaint himself with a field, a good inventory should serve as a better predictor than a single question and rating. The scale might then function as a concise verbal tryout of activities that characterize the

field. At best, then, AIM validities for the "inexperienced" student might approach the validities of the rating for the "experienced" student. But the lack of consistently high concurrent correlations between AIM scales and ratings of interest in subjects actually taken leaves us with a gnawing doubt about the efficacy of some of the scales as adequate "miniaturizations" of course experience. Perhaps rating on a single question will often suffice, regardless of previous experience. Perhaps even students who have not taken a course in a given field absorb enough of a notion about that field (by the time they reach 11th grade) to sense their interest in it as well as AIM can measure it. These speculations anticipate the shape of the analyses in the studies of predictive validity, to be published in a forthcoming report.

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Appendices A and B, pages 72-98, which consist of copyrighted material, have been removed from this document.

Appendix C

Glossary of Variables

Glossary of Variables

Ability Variables (PSAT Scores)

PSAT-V: Verbal

PSAT-M: Mathematical

Interest Inventory Variables (Scores on AIM Scales)

Bio: Biology	Soc Sci: Social Sciences	Mus: Music
Eng: English	Sec: Secretarial	Ind Art: Industrial Arts
Art: Art	P Sci: Physical Science	Home Ec: Home Economics
Math: Mathematics	F Lang: Foreign Language	Bus: Business

Student Questionnaire Variables

SES: Socioeconomic level derived from father's occupation and mother's education (Figure 2)

Cur Type: One of six curricula named by student as best describing his curriculum

Cur C: Curriculum consistency score based on consistency of curriculum membership in grades 10, 11, and 12

PLANS: Definiteness of vocational plans

SCORE A-D: Scores based on ranking of four kinds of occupational opportunities--(A) Opportunity to work with ideas and theories, (B) Opportunity to work with people, (C) Opportunity to work with objects and things, (D) Opportunity to be a leader

YRS: Number of years of post-secondary school education planned

Project TALENT Information Tests: Scores on no more than 12 items randomly selected from subscales of Part I and Part II of the following Project TALENT Information tests:

Literature	Mathematics	Home Economics
Music	Physical Science	Mechanics
Social Studies	Electricity	Art
		Biology

Glossary of Variables (cont'd)

Activities: Rating of frequency of participation in the following activities:

Drawing	Making Electrical Equipment	Cooking
Collecting	Woodworking	Auto Repair
Model Building	Raising Pets	Gardening
Photography	Sewing	Doing Word Puzzles

Self-rating of Interest: In the following specific school subjects:

Physics	Bookkeeping	Earth Science	Music Appreciation
Chemistry	English (A)	Spanish	Trigonometry
Biology	European History	Typing	English (B)
Algebra	Shop	American History	General Science
French	Retailing	Geometry	Civics
Art Appreciation	Social Science	Business Arithmetic	Shorthand

SI: Self-rated interests in the 12 subject field titles corresponding to the AIM scale titles

APPENDIX D*

Grade 11 Norms for the Academic Interest Measures

*Published under separate cover. Copies are available from the author upon request.

APPENDIX E

A Self-Scoring Form of AIM

A Self-Scoring Form of AIM

Paul B. Diederich

When the writer had to use AIM (Academic Interest Measures) as one measure of the outcomes of an experimental study in 1966, he was shocked at the cost of scoring, which at that time was $1.15 per student, owing to the number of passes through the scoring machine needed to get the twelve basic scores. This figure must not be taken as the present cost, since improvements in the scoring machine enable it to handle multiple scores more efficiently, but the cost of machine scoring is bound to remain high--possibly high enough to limit the use of this instrument to experimental studies supported by a research grant. Furthermore, it took three weeks to get the scores, and then they were merely raw scores which had to be interpreted by looking up each one in voluminous tables of norms. This took so much time that the writer concluded that the instrument would never be used routinely to measure the effect of various course improvements on student interests unless a way were found to get interpretable scores immediately, and preferably by student scoring at no visible cost. Since students can see no point in faking scores on this instrument, it was felt that student scoring would be as accurate as it needed to be for the purposes for which this instrument would ordinarily be used.

As previously explained, the AIM test booklet lists 192 activities representing twelve fields of study. These were retyped in a different order such that each field is represented in every twelfth item rather than in every fourth. Since it was possible to type 24 activities on each page, each field is represented twice on each page or 16 times in all. To get student responses to these items to lie in two lines across the answer sheet, the activities on each page were lettered from A to X. Hence all activities representing English, for example, are marked in lines A and M; all those representing Social Studies in lines

B and N. The sum of the responses marked in these two lines ought to represent the relative amount of interest expressed in these fields. Hence it was decided to have students mark each activity as follows:

2 - if you like it or think you would like it;

1 - if you don't know or don't care one way or the other;

0 - if you dislike it or think you would dislike it.

These numbers replace L (like), I (indifferent), and D (dislike) in the standard form of the instrument, which are converted by the scoring machine into the numbers given above; but in the self-scoring form, it would obviously save one step to have students use these numbers directly. The directions to students are such that the responses mean the same thing no matter whether the numbers or letters are used; hence the norms established for the standard form are equally applicable to the self-scoring form. The items are identical except for the different order, and Halpern (1968) found that the revised order had no significant effect on scores; more exactly, no significant effect on inter-item correlations within fields--the only way in which scores were likely to be affected.

What this all amounts to may be seen most clearly by a glance at the self-scoring answer sheet reproduced on the next page as filled in by a student, Tom Sample. Note that responses to the activities typed on each page of the test booklet are marked in one column of boxes on the answer sheet, and that the 24 activities on each page are always lettered A through X. Hence the activities representing each field always have the same two letters, such as A and M for English. The result is that, although the activities seem to be arranged in a random order, those representing each field lie in two lines across the answer sheet. The sum of the numbers written by the student in these two lines corresponds to the relative amount of interest he has expressed in that field.

ACADEMIC INTEREST MEASURES (AIM), Self-Scoring Form, Educational Testing Service

Name Tom Sample Teacher _____ Date _____

In the box corresponding to each activity (below at the left) write
2 - if you like it or think you would like it;
1 - if you don't know or don't care one way or the other;
0 - if you dislike it or think you would dislike it.

Page

	1	2	3	4	5	6	7	8
A	0	1	0	1	2	2	0	2
B	1	1	1	2	0	0	2	2
C	0	0	0	0	1	0	0	0
D	0	0	0	0	0	0	0	0
E	2	1	1	0	0	0	0	0
F	1	0	1	0	0	1	0	2
G	2	2	2	2	1	1	1	2
H	1	1	2	1	0	0	2	1
I	0	0	1	0	1	2	2	2
J	2	2	0	1	1	0	0	1
K	2	2	2	1	1	1	1	2
L	0	2	1	1	2	2	2	2
M	1	1	2	1	2	2	2	2
N	1	2	2	1	2	2	0	2
O	0	0	0	1	0	0	2	1
P	1	2	0	2	0	0	0	0
Q	2	2	1	0	1	0	1	0
R	0	2	1	0	0	2	2	2
S	1	1	2	2	2	2	1	2
T	0	1	1	0	2	2	0	1
U	2	1	2	1	1	0	2	0
V	2	2	0	1	0	1	2	0
W	2	2	1	1	2	2	2	1
	2	2	0	2	2	2	0	0

Do this after filling all the boxes:

A+M 21 Eng H G+S 26 Lang H

B+N 21 Soc M H+T 15 Math M

C+O 5 Bio L I+U 17 Phy M

D+P 5 Sec L J+V 15 Bus M

E+Q 11 Home M K+W 25 Shop M

F+R 14 Art M L+X 22 Mus H

Directions: In the blank after the sum of two letters (such as A+M), write the sum of the numbers written in those two lines at the left. Write abbreviations of the fields with highest and lowest sums below:

Highest: 1 Lang, 2 Shop, 3 Mus.

Lowest: 10 Home, 11 Bio, 12 Sec.

In the blank after the abbreviation of a field write L (low), M (middle), or H (high) depending on the number nearest your sum in the table below for BOYS or for GIRLS.

BOYS	L	M	H	BOYS	L	M	H
Eng	5	14	22	Lang	5	15	25
Soc	8	17	26	Math	7	17	27
Bio	9	17	26	Phy	11	20	29
Sec	9	16	23	Bus	10	18	26
Home	5	13	20	Shop	15	23	30
Art	7	15	23	Mus	5	13	22

GIRLS	L	M	H	GIRLS	L	M	H
Eng	11	19	27	Lang	11	21	30
Soc	8	17	26	Math	3	13	22
Bio	7	16	24	Phy	3	12	21
Sec	14	22	31	Bus	11	19	26
Home	19	25	31	Shop	3	11	19
Art	12	20	28	Mus	8	17	25

If your sum is midway between two of these numbers, mark it M- or M+.

To enable students to count these sums quickly and accurately in their heads, a "Scoring Aid" has been prepared and is reproduced below. It is probably the simplest scoring key ever devised for an instrument that yields twelve basic scores. The only specification it must meet is that it must be a third of a page--3 2/3 inches--from top to bottom. As the directions on the "Scoring Aid" indicate, it is laid across the answer sheet with the top edge just below line A; then the bottom edge will lie just above line M. The student counts the numbers he sees in these two lines--just above and below his "Scoring Aid"--and writes the sum in the space at the right labeled A+M. This is easy to do since there are only 16 numbers and each one is either 2, 1, or 0; hence the highest possible sum is 32, and most sums are likely to be 20 or below. After recording the first sum, the student moves his "Scoring Aid" one line down and counts the sum of the numbers he has written in lines B and N. He keeps on doing this until he reaches the bottom of his answer sheet and has filled in all 12 sums called for at the top of the column at the right.

He is next directed to write abbreviations of the fields in which he has the three highest and three lowest sums (raw scores). The abbreviations are printed just to the right of the spaces for recording these sums and are probably self-explanatory, except that Sec stands for Secretarial; Lang for Foreign Languages; Phy for Physical Sciences; and Shop for the field called Industrial Arts in the standard form. As explained in the body of this report, the raw scores have some immediate and face-valid meaning, since they represent the number of times the student has said that he likes (or dislikes) the activities representing each field. Note that "Tom Sample" has his three highest raw scores in Foreign Languages, Shop, and Music.

Next, the student is directed to interpret each sum (raw score) by reference to the table for Boys or for Girls printed in the lower right-hand corner of the answer sheet. These are means and one standard deviation below and above for

all males and all females among the 30 pages of norms printed in this report for the standard form of this instrument. These are close enough to the low, middle, and high points given in any of the more specialized tables of norms to give an approximately correct notion at once of whether any given raw score is really high or low, or whether it is the normal, expected amount of interest expressed by the average boy or girl in grade 11.

Take, for example, the first sum recorded by "Tom Sample": a raw score of 21 in English. He glances at the table for Boys below and sees that this sum is closest to the High score for Boys, which is 22. He therefore marks this first sum H (for High). Note that English was not among his three highest raw scores, yet it was a high score for a boy; it would have been only a middle score for a girl.

Then go on to the second sum recorded by "Tom Sample," a raw score of 21 for Social Studies--exactly the same raw score as in English--but this time it has to be marked M (middle) since it is closer to the middle score (17) for boys than to the high score (26). Although this student would probably feel that there was little to choose between these two fields--he liked one about as well as the other--his counselor may find it helpful to know that his English score was somewhat unusual for a boy, while his Social Studies score was just a bit above average. Incidentally, if a sum is midway between two numbers given in the table, it is Marked M- or M+. Since the dividing line is approximately half a standard deviation below and above the mean, in a large normal population about 30% of the sums will be marked L, 40% M, and 30% H.

It may also be worthy of remark that, although his raw score in Shop was second highest for "Tom Sample," it was just a shade above average for a boy and hence is marked M. In the case of this student, it was known that his interest in Shop (do-it-yourself craft activities) was entirely a hobby interest, carried on in a home workshop, and was not reflected in his choices of electives or activities in school, whereas his unusual interest in Foreign Languages was

reflected in his program and his high interest in Music was expressed in his choice of school activities. The same sort of thing often happens with a high raw score in Home Economics for ls. That is normal and expected and often represents interest in activities carried on at home with no expectation of studying them in school. Thus the little table of norms for boys and for girls has a moderating influence on interpretations that might be drawn from the raw scores alone. It can bring to light scores that seem to be in the middle yet are unusually low or high for a boy or a girl; also apparently high or low scores that are really just average and have no particular significance for choice of studies or activities in school.

Most 11th grade classes that have thus far used this instrument are able to finish marking their responses in 25 or 30 minutes and then to score and interpret their responses with the "Scoring Aid" in the remaining 10 or 15 minutes of a class period. A few classes that were unusually deliberate in marking their responses had to put off the scoring and interpretation until the first 15 minutes of class on the following day. It should be noted that students may also take this instrument as homework (since there is no point in faking responses) and then score and interpret their answer sheets the following day in class. The scoring and interpretation are better done in class, since the directions are a bit complicated, and the teacher usually has to explain them one part at a time. But the results are available immediately without visible cost; in fact, the multilithed answer sheet costs much less than a machine-scorable answer sheet, to say nothing of the cost of machine scoring. For further information on the self-scoring form of AIM, address the Office of Special Tests, ETS, Princeton.

Halpern, G. Item arrangement and bias in an interest inventory. Educational and Psychological Measurement, 1968, 28, No. 4, 1111-1115.

Scoring Aid for ACADEMIC INTEREST MEASURES (AIM), Self-Scoring Form, ETS

Use this sheet to help you count the sum for each field on the answer sheet. The first sum called for in the right-hand column is A+M. This means the sum of the numbers you have written in lines A and M in the boxes at the left. Place the top edge of this sheet just below line A. The bottom edge will then lie just above line M. Add together (in your head) all the numbers you see just above the top edge and just below the bottom edge of this sheet. Write the sum (total) of these numbers in the blank after A+M.

The next sum called for is B+N. Move this sheet down one line so that the top edge is just below line B, the bottom edge just above line N. Again, add together all the numbers you see just above the top edge and just below the bottom edge. Write this sum (total) in the blank after B+N. Keep on doing this, moving the sheet down one line at a time, until you reach the bottom of the answer sheet. Write down all 12 sums that are called for before you start to label them L, M, or H (low, middle, or high) by reference to the table for BOYS or for GIRLS.