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ABSTRACT

In recent research, female adolescents have been found to prefer history, language, and writing courses, while male adolescents have been found to prefer mathematics and science courses. These gender differences in course selection occurred despite the fact that female and m e adolescents performed equally well in these courses. This study examines the motivational factors contributing to course selection in a sample of highly talented adolescents enrolled in the Duke University Talent Identification Program (TIP) Summer Residential Program, an intensive 3-week academic experience for exceptionally talented adolescents. Girls and boys selected different types of classes, with course participation falling along traditional gender stereotyped lines. Boys and girls both performed exceptionally well, and said they took the course they did because the subject was interesting. However, females more often than males enrolled in classes because they perceived them as challenging, different than usual, not offered at school, and as making them more well rounded. Males more often than females selected classes because they thought they would do well and because they viewed these classes as being useful for further schooling or career. The possible role of parenting in contributing to these gender differences, and the implications of the study findings for overall educational goals are discussed. (The TIP end-of-course questionnaire is attached.) (Author)

Gender Differences in Course Selection Criteria: Academically Talented Students in an Intensive Summer Program

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Running head: COURSE SELECTION CRITERIA

Abstract

In recent research, female adolescents have been found to prefer history, language and writing courses, while male adolescents have been found to prefer mathematics and science courses. These gender differences in course selection occurred despite the fact that female and male adolescents performed equally well in these courses. This study examines the motivational factors contributing to course selection in a sample of highly talented adolescents enrolled in the Duke University Talent Identification Program (TIP) Summer Residential Program, an intensive 3-week academic experience for exceptionally talented adolescents. Girls and boys selected different types of classes, with course participation falling along traditional gender-stereotyped lines. Boys and girls both performed exceptionally well, and said they took the course they did because the subject was interesting. However, females more often than males enrolled in classes because they perceived them as challenging, different than usual, not offered at school, and as making them more well-rounded. Males more often than females selected classes because they thought they would do well and because they viewed these classes as being useful for future schooling or career. The possible role of parenting in contributing to these gender differences, and the implications of our findings for overall educational goals, are discussed.

Academically Talented Students in an Intensive Summer Program: Reasons for Course Selection

Current concern regarding adolescents' scholastic performance in the United States, particularly in the areas of mathematics and science, has focused attention not only on adolescents' academic achievement, but also on their selection of courses as a first step in the process of gaining mastery over new academic domains (Armstrong, 1985; Chipman & Wilson, 1985; Stocking & Goldstein, 1992). In a large sample of very talented young adolescents participating in an intensive summer program, Stocking and Goldstein (1992) found no gender differences in achievement along traditionally gender-stereotyped areas of study (e.g., mathematics and science versus literature); in fact, females and males displayed equally exceptional performance in all areas of classroom study. However, these students did differ in accord with gender stereotypes in their selection of curricular options, with higher proportions of females choosing history, language, and writing courses, and higher proportions of males filling mathematics and science courses. Similar findings of gender-stereotyped preferences for particular subject areas have been found by other investigators (Lawrie & Brown, 1992; Lubinski & Benbow, 1992; McTeer, 1986; Shemesh, 1990).

However, the reasons for these preferences have remained unclear, and the intriguing finding that gifted adolescents' gender-stereotyped course selections did not appear to be based upon any gender-related differences in performance suggested that other factors were involved in the development of course preferences. These considerations prompted us to expand the investigation of gifted adolescents' selection of classes. Our effort has been to understand the specific motivational factors that contribute to course selection in highly talented youngsters. Elucidation of these factors should shed light on the operation of traditional gender stereotypes in these students' selection of their curricula options. Findings in this area also have implications for college-level study, since the number of math and science courses in high school has been found to predict choice of undergraduate major (Ethington & Wolfle, 1988; Lubinski & Benbow, 1992). Because

course selection has not been previously studied with talented children, our study was designed with an exploratory, "open net" attitude.

Method

Subjects

A subset of students who attended one of two 1992 terms at the Duke University Talent Identification Program (TIP) Summer Residential Program (SRP) participated in this study by completing an end-of-course evaluation questionnaire (described below). In all, 947 students (43% female, 57% male) participated; this subset was representative of the total of 1010 students who attended TIP's SRP at Duke University during 1992. Girls and boys in this sample averaged 14.10 and 13.96 years of age, respectively, a non-significant difference. SRP is a scholastic program held on the Duke University campus in two terms of 3 weeks each. During a given term, students enroll in one course that meets 6 hours per day Monday through Friday and 3 hours on Saturday, with an hour of required study hall in the evening. Courses are designed to provide a highly intensive intellectual experience, and most constitute the equivalent of a year of high school or a semester of college-level work.

These students were initially identified through TIP's Talent Search, which covers 16 states in the southeastern and midwestern United States. The Talent Search invites seventh graders who score in the top 3% on their in-school standardized achievement tests to take the Scholastic Aptitude Test (SAT) or American College Test (ACT). Approximately 6% of those taking either test then qualify for admittance to the SRP at TIP. Eligible students may return to SRP until they are rising high school juniors, for a total of 4 possible summers. Approximately 53% of this sample were attending SRP for the first time, 25% for the second time, 15% for the third time, and 7% for their fourth (and last) time. Students in this study ranged in age from 12 to 16, including one 17-year old who was included with the 16-year olds for purposes of analysis. Of the students attending the SRP during 1992, 3.7% were black, 73.5% were white, 2.2 % Hispanic, 0.1% native

American, 19.8% Asian, and 0.6% categorized themselves as "other." Academically, almost all students excelled during their stay at TIP: 91% received a final grade of an 'A' or 'B,' and only 2% received below satisfactory grades.[1] This level of performance is all the more striking in light of the advanced level of the courses they took.

Procedure

Students selected classes from a list of over 30 possible offerings and, provided that they met entry requirements for the class, were assigned to their first choice on a first come, first serve basis until the class became filled. Each of these classes has particular entry requirements, such as prerequisite classes and specific minimum SAT or ACT scores. In accordance with findings of age-related increases in SAT and ACT scores (Brounstein, Holahan & Sawyer, 1987), these requirements become increasingly stringent for older students. Typical classes consisted of 15-20 students. Seventy percent of the students in this sample were assigned to their first choice, and the remainder were assigned to alternate choices.

For purposes of analysis, classes were grouped into four areas: (1) math courses included Mathematical Problem Solving, Discrete Mathematics, Number Theory, Engineering, Computer Science, and a series of Precalculus courses; (2) science courses included Astronomy, Bio-Ethics and Scientific Discovery, Evolutionary Biology, Chemistry, and Physics; (3) humanity and social science courses included Architecture, Film & Video, International Relations, Philosophy, Psychology, Shakespeare, and a selection of economics, history and writing/literature courses; and (4) language courses included Chinese, French, German, Japanese, Latin, and Russian. The humanities/social sciences area represented the largest number of SRP classes and thus the largest number of students. In our sample, 39% took humanities/social science classes. 37% took math classes, 14%, science courses, and 10%, language courses.

Instrument

At the end of their 3-week course students were asked to complete anonymously a one-page "TIP End of Course Questionnaire," a copy of which is appended as Appendix A. Students were told that their responses on this instrument would not in any way affect their grade or ability to return to TIP. The questionnaire was distributed to students during their final class session along with a standard course evaluation form not considered in this paper, and both instruments were completed during class time and collected by teaching assistants. Completed End of Course Questionnaires were read only by the research staff at TIP, not the course instructors. The End of Course Questionnaire was designed to capture in an open-ended manner students' motivations for selecting particular courses and rejecting others. The questionnaire provided subjects with a number of optional formulations of these motivations, such as "I thought the subject would be interesting" or "I thought I would do well in this class," and allowed respondents to check as many of these items as they liked. To avoid restricting subjects' responses, the questionnaire also provided students with opportunities to state their own reasons for taking particular classes and rejecting others. These student-generated reasons were subsequently categorized with the other items provided on the instrument and included in our analysis.

This instrument gathered four types of information: (1) restricted demographic information regarding the subjects' age, gender, number of terms spent at TIP's SRP, class attended, and whether they received their first choice in course assignment; (2) information regarding why they took the class they did; (3) information regarding why they did not take another class; and (4) students' comments regarding any improvements they could envision for the SRP. Between Term I and Term II we added an item to the questionnaire asking students whether they liked the course they took.[2] This study considers only the demographic information and the reasons why students selected courses. Responses on both Term I and Term II SRP course questionnaires are considered together in this study. (No students in our sample took classes during both terms, a rare event in any case.)

Results

Course enrollment

Girls and boys took different types of classes, X^2 (3, N = 928) = 38.287, p < .001, a finding that replicated results from a prior study of course selection (Stocking & Goldstein, 1992). The breakdown of course enrollment by gender is displayed in Table I. Cell-by-cell inspection of the chi-square values indicated that gender-associated differences in course selection were most marked for mathematics and humanities/social sciences, followed by language classes, with course participation varying according to traditional gender stereotypes.

Insert table I about here

These findings were confirmed when we analyzed students' choices while controlling for the selection status of the classes they took (i.e., whether it was their first or an alternate choice). Course area selected was not independent of gender for either those who received their first choice, X^2 (3, N = 667) = 32.323, p < .001, or for those who received an alternate selection, X^2 (3, N = 246) = 10.178, p < .017. Under both first-choice and alternate-choice conditions, gender differences in the selection of mathematics courses contributed the most to the overall pattern of gender differences; under both conditions more than twice as many boys as girls enrolled in mathematics classes. When students received their first choice, gender differences in selecting language and humanities/social science courses were also statistically significant. This was not the case for those who received alternate choice classes.

Student enrollment in first choice classes was not independent of course area, X^2 (3, N = 916) = 11.557, p < .009. Inspection of the chi-square cells revealed that this effect was largely produced by (a) the higher than expected percentage of students taking mathematics courses as their first choice and (b) the higher than expected percentage of

students taking language classes as an alternative to their first choice.[3] Contributions to the overall chi square from the sciences and humanities/social sciences cells were minimal. These findings can be taken as evidence that the gender differences in course selection largely resulted from the cumulative effect of students' selections, rather than resulting from class assignments made by TIP administrators. This interpretation is particularly compelling in light of the high rate at which students were assigned to their first choice course, and the fact that gender differences in course selection did not disappear even when students are assigned to their alternate choice classes.

Finally, a one-way ANOVA showed that subject age varied with area of study, $F(3, 923) = 10.27$, $p < .0001$. Examination of students' mean ages in each area of study indicated that the relationship between age and area of study was carried by humanities/social sciences students, who tended to be somewhat older (mean = 14.3 years) than science students (mean = 13.9 years), math students (mean = 13.9) and language students (mean = 13.7). Post hoc comparisons of students' mean ages in each of the four areas of study using Sidak's multiple comparisons procedure to control for familywise Type I error confirmed that the only significant difference resulted from the older age of the humanities/social science students. Although small cell sizes prevented individual chi-square tests of course area by sex at each age level (12 through 16 years) from reaching significance, inspection of these cells indicated that at each age level female students were underrepresented in math and science courses, while males were underrepresented in humanities and social sciences courses. Traditional gender differences in area of course enrollment remained relatively constant from age 12 through age 16, the developmental span represented by our subjects.

Reasons for course selection

Overall findings. Figure 1 provides a profile of the reasons behind course selection that were indicated by male and female students who were assigned to their first choice class. The same data for students assigned to an alternate selection class are presented in

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Insert figure 1 about here

Figure 2. As noted above, students were permitted to endorse more than one reason on the questionnaire, and in practice they frequently indicated as many as 4 or 5 reasons contributing to their decision to take a particular course. Figures 1 and 2 reveal two broad

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Insert figure 2 about here

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patterns of interest. First, an interesting pattern of gender differences in endorsement of course selection criteria emerged. Females more often than males enrolled in classes that they perceived as challenging, different than usual, not offered at school, and as making them more well-rounded. And, compared to males, females less often chose classes because they thought they would do well in them. These comparisons were all statistically significant, and are set forth in Table II. In keeping with the exploratory nature of this study, we adopted the conventional .05 level of significance rather than a more conservative critical value, despite the multiple comparisons being conducted. This approach allowed a richer set of course selection patterns to emerge than would have otherwise been possible. However, since we did not control for possible experimentwise error, the reader should expect that, overall, between one and two of the significant findings reported here were produced by chance.

Insert table II about here

This profile of course selection criteria endorsement suggests that females in our sample were less concerned with performance and more concerned with engaging in new challenges and enlarging the scope of their learning. Gender differences along these lines appear to be robust: even when subjects were assigned to alternate-choice classes, girls more than boys said they selected that class because it would help them become more well-rounded (X^2 (1, N = 247) = 5.664, p < .017) and because it was different than usual (X^2 (1, N = 247) = 6.354, p < .012).

No other gender differences in course selection criteria were statistically significant at this level of analysis, although one other gender difference emerged when we focused on students' most important reasons for taking classes (discussed below). At the current level of analysis, the second outstanding pattern of responses that emerged is clearly evident from Figures 1 and 2. Over 80% of our subjects endorsed the questionnaire item which indicated that interest in the subject matter being studied in class was a reason for taking the course, and over 65% endorsed the questionnaire item which indicated that the future usefulness of the class in terms of school, college or career was a reason for taking the course. Endorsement was far more frequent for these two items than for any other, with the single exception that students who were assigned to an alternate choice class endorsed the questionnaire item indicating that they were not assigned to the course they wanted. Although about 79% of students in this category endorsed the "I didn't get what I wanted" item as a reason for taking an alternate choice class (see Figure 2), the relatively small number of students enrolled in alternate choice classes meant that less than 22% of our total subject pool actually endorsed this item. In contrast, as Figures 1 and 2 reveal, course interest and usefulness were heavily endorsed by students under both first choice and alternate choice conditions. High-frequency endorsement of these items is broadly

consistent with the high level of motivation and performance exhibited by these gifted youngsters.

However, interpretation of these patterns is made more difficult by the multiple responses we received from each student. Since students were free to endorse as many reasons for course selection as they liked, the high-frequency endorsement of interest and usefulness may simply represent common, but not high, priorities in course selection. To explicate these data, we sought to discover patterns in students' responses when they were restricted to indicating a single most important reason for selecting a class.

Students' Most Important Reasons for Course Selection. Figures 3 and 4 display students' nominations of the single most important reason behind their choice in courses. Figure 3 shows this information for students who were assigned to their first choice class; Figure 4, for students who were assigned to an alternate choice class.

Consistent with the patterns of responses in Figures 1 and 2, Figures 3 and

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Insert figures 3 and 4 about here

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4 indicate that interest and future usefulness remain the two most frequently endorsed criteria for selection of curricula options, regardless of whether they were assigned to their first or an alternate choice class. About 44% of all students indicated that their most important reason for taking the class was that it was interesting, and another 30% indicated that their most important reason was that the class would be useful. These percentages are an order of magnitude greater than the rates of endorsement for any other course selection criteria.[4] Thus, when students were required to restrict their responses to a single most important reason for taking a course, far fewer students of either sex endorsed any item other than those of interest and future usefulness. Clearly, these two items are high frequency *and* high priority factors in students' course selection process.

Further inspection of Figures 1-4 reveals that boys and girls both tended to endorse interest over usefulness regardless of whether they were restricted to endorsing a single most important reason or permitted to indicate as many reasons as they liked, and regardless of whether they received their first or an alternate choice class. The patterns displayed in these figures also indicate that boys more than girls tended to endorse future usefulness. Although present in all four figures, this gender difference is only statistically significant for Figure 3, when we considered the most important reasons for taking classes endorsed by students who received their first choice. In this condition about 28% of the girls said the most important reason for taking the class was its usefulness, while the corresponding figure for boys was 36% (X^2 (1, N = 663) = 5.022, p < .025).

While clearly intriguing, the relationship between gender differences in course selection and in selection criteria remained cloudy. In an attempt to clarify our understanding of these patterns, we took our inquiry into students' reasons for course selection to more a refined level, and analyzed their selection criteria by area of study -- mathematics, sciences, humanities/social sciences, and languages.

Findings by area of study. Students clearly differentiated the type of class in which they were enrolled by the type of selection criteria they endorsed. For instance, endorsing course interest or course usefulness as the most important reason for choosing a course was not independent of area of study (X^2 (3, N = 663) = 131.796, p < .001). Differences in female and male students' endorsements of most important course selection criteria associated with area of study are displayed in Figures 5 and 6. In addition, a series of individual chi square analyses were

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Insert figures 5 and 6 about here

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conducted to test independence of course area with each selection criterion item on the TIP End of Course Questionnaire. Student responses on these items were analyzed both at the

level of all selection criteria endorsed by subjects, and at the level of students' nominations of the most important reason for taking a class. Results of these tests are shown in Tables 3 and 4 and confirm that patterns of selection criteria endorsed by students significantly differed depending upon the type of class being taken. However, these differences

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Insert tables 3 and 4 about here

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primarily appeared for students taking humanities/social sciences and mathematics classes, rather than for those taking language and science courses. Patterns of selection criteria endorsement did not differ from those expected by chance for science students, and language students tended to parallel humanities/social science students' endorsement patterns, but to a less pronounced degree. For this reason our findings focus on the patterns of criteria endorsement by humanities/social sciences and mathematics students.

When we tested students' multiple endorsement of reasons for selecting classes, two patterns of endorsement were significant (see Table III). First, mathematics students endorsed at higher-than-expected rates the following reasons for taking their classes: they only qualified for the course they took, the class was useful, their parents wanted them to take it, and their teachers thought it would be a good class to take. Fewer mathematics students than expected said they took the class they did because it was interesting, would make them well-rounded, was different than usual, or was not offered at their school. Second, the reverse pattern of selection criteria endorsement held for humanities/social sciences students. Significantly more of these students than expected said they took the course they did because it was interesting, would make them well-rounded, was different than usual, and was not offered at their school. Fewer of these students than expected said they took the course because it was the only one for which they qualified, because it was useful, their parents wanted them to take it, or their teachers thought it would be a good class to take. Language students also followed these patterns of criteria endorsement, with

the single exception being that they tended to endorse course usefulness at higher than expected rates.

When we examined students' single most important reason for taking the class they did, we found quite similar patterns, although fewer of the chi square tests in this series reached statistical significance (see Table IV). Overall, the most robust difference in curricula selection criteria was the finding that more mathematics students than expected said the most important reason for taking the class was that it was useful, while more humanities/social science students than expected said the most important reason was that the class was interesting. This pattern held across the board, regardless of whether students were assigned to their first or alternate choice and regardless of whether they selected as many reasons for taking the class as they liked or only gave their most important reason. Finally, an additional pattern of area-related differences in selection criteria emerged when we tested students' most important reasons for taking classes by course area: more than expected numbers of mathematics students, and fewer than expected numbers of humanities/social science students, said the most important reason for taking the class was that it was challenging.

Discussion

Gender differences in course selection clearly emerged in this sample of highly able adolescents, with more females taking language and humanities/social science courses, and more males taking math courses. The stability of these gender differences across ages 12 through 16 suggests both that gender-related preferences in curricular options are well-developed by the time students complete their elementary education, and that these preferences are resistant to change as students progress through high school. Further evidence of stable preferences for areas of study is provided by findings that college undergraduate majors are predictable from the types of classes taken in high school (Ethington & Wolfle, 1988; Lubinski & Benbow, 1992). Clearly, factors leading to the development of gender-related preferences merit further study. Our findings suggest that

these elements are probably operating well before the age at which students begin choosing the type of classes they take, so that by the time students participate in programs such as TIP's SRP, their curricular preferences are already well-formed. One area for further research is therefore the development of academic preferences in early and middle childhood. Ground-breaking work in this area has already commenced (e.g., Stipek & Gralinski, 1991).

The only age-related change in course preferences we found in the current sample was the somewhat increased age of humanities/social science students relative to the rest of our sample. One explanation for this age difference is that older students may be in a position to take more electives. Many of the humanities/social science courses, in turn, represent these electives, while the math, science and language classes represent curriculum requirements that older students will already have fulfilled during the school year. Given students' high endorsement of course usefulness as a selection criterion, it makes sense that some students would decide to take those TIP SRP classes that were useful in terms of curriculum requirements first, and only then go on to the elective courses offered in the humanities/social sciences area.

One limitation of this study resulted from the administration of the questionnaire at the end of the course, rather than before classes actually started. Instead of assessing students' motivations for selecting courses at the time they were making these decisions, this study required subjects to reconstruct their motivations retrospectively. This is an arguably more difficult task and may have biased subjects to make their responses on the questionnaire consistent with their actual experience. Thus in some cases students may have inadvertently responded to the instrument by evaluating the course they had just taken (e.g., as interesting or challenging) rather than indicating the original reasons they selected this class. Future research can clarify these issues by assessing course selection criteria both before and after classes are completed.

Successful participation in the type of rigorous, fast-paced academic experience offered by the SRP at Duke University clearly demands a high degree of initiative and intrinsic motivation, attributes that appear to be at least partially confirmed by the pattern of students' responses on the End of Course Questionnaire. Over 90% of female students and 85% of male students indicated that they took the class they did because the subject was interesting. Respondents indicated interest in the subject more frequently than any other reason in listing all the factors that lead them to their course selection, and interest was also the preferred single "most important reason" for choosing classes. Thus although students were drawn to TIP classes for a wide variety of reasons, intrinsic interest appears to be the outstanding motivator for these individuals.

Significant differences in endorsement of course selection criteria, and significant gender differences in enrollment, were not found for science classes. These findings may have resulted from the fact that both traditionally "hard" and "soft" science classes were categorized together. Students' reasons for taking world geography or bio-ethics may have been very different than their reasons for taking chemistry or physics, but combined, these differences may have washed out in our analyses. A similar wash may account for the lack of gender-related differences in enrollment in these classes. Although statistically hampered by the small number of students in each of these classes, preliminary analyses confirmed this reasoning. Twice as many boys as girls took chemistry, and almost four times as many boys as girls took physics. Students' choice of selection criteria for these two classes also followed the basic pattern of endorsements indicated by mathematics students, while students' selection criteria for classes such as bioethics and astronomy roughly paralleled the pattern of endorsements indicated by humanities/social sciences students. Similar gender differences in science topic preferences have been reported elsewhere (e.g., Ormerod & Wood, 1983; Taber, 1991).

Although we can only speculate about the causes contributing to the development of gender-associated preferences for particular areas of academic study, it seems clear that, for

these gifted youngsters, academic performance is *not* one of them. For these talented individuals, performance was not different for boys and girls in any area of study (Stocking & Goldstein, 1992). One influence leading to gender differences in course selection that may have been tapped in the current sample is that of parental influence (see, e.g., Eccles (Parsons), 1983; Eccles, 1985; Eccles & Jacobs, 1986; Yee & Eccles, 1988). Boys slightly more than girls tended to endorse parental desire as a reason for taking the class they did (23% of boys versus 21% of girls), a difference that did not rise to statistical significance. However, a significantly higher than expected proportion of mathematics students said they took their class because their parents wanted them to, and significantly more boys than girls enrolled in mathematics courses. And while parents' desires for their children were not frequently endorsed as the most important reason for selecting a course, parental influence does not always assume obvious or overt forms, and is likely to have been underreported by these subjects.

Other evidence for the role of parental influence in their adolescents' selection of courses comes from the provocative finding that girls significantly more than boys said they took classes because these classes would help them become well-rounded, because they thought the classes would be challenging, and/or because the classes were different from usual or not offered at their home schools. In contrast, boys significantly more than girls said they selected their classes because they thought they would do well or because it would be useful for future schooling and career. Although we would advise caution in interpreting these results, they certainly suggest that females in this sample are more exploratory and less concerned with performance and achievement than boys. Because parents have been found to have more rigid, well-defined expectations for boys and looser, more open-ended expectations for girls in both academic (Eccles, 1985) and non-academic domains (Intons-Peterson, 1985), it may be that the gender differences we found in course selection criteria are associated with differences in parenting styles. Taken together, these

considerations suggest that investigation of parental influence in the development of students' curricula preferences is a promising area for future research.

Finally, the finding that females in this sample selected courses because they were unusual, challenging and would help them to become well-rounded, while males tended to focus on achievement and performance, warrants close attention. All too often, male youngsters have been held up as the standard for performance in the academic arena, a standard to which females have been expected to rise (e.g., Benbow & Stanley, 1980; Reis, 1987; Strauss, 1988). In this sample, however, it is the females who may be exhibiting preferable patterns of course selection, seeking classes that challenge and expand their intellectual horizons rather than concerning themselves with performance. Given the equivalence of actual academic performance by both males and females in this sample, females' broader, exploratory, challenge-seeking approach represents the standard to which males could be encouraged to aspire. A richer, less achievement-oriented education might thereby be attained.

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Footnotes

[1] Course grades were based upon teacher-constructed examinations and assignments, and in many instances also upon end-of-course standardized tests.

[2] In fact, only 8 subjects said they did not like the course they took.

[3] Only 6 of these students had selected a first-choice class outside the language and humanities/social sciences areas, too few to alter our overall findings of traditional gender differences in course selection.

[4] Again, although Figure 4 indicates that about 22% of those not enrolled in their first choice selection said the most important reason for taking the class they did was that they did not get into the one they wanted, these students amounted to only 6% of the total subject pool.

Table I

Course Enrollment as a Function of Gender

Type of Course	Number of Girls Enrolled	Number of Boys Enrolled	Totals	Chi Square
Mathematics	106	236	342	31.28**
Science	54	79	133	0.33
Languages	51	38	89	8.35*
Humanities/Social Sciences	187	177	364	17.61**
Totals	398	530	928	

* $p < .005$ ** $p < .0001$

Table II

Endorsement of Course Selection Criteria as a Function of Gender

Item from Questionnaire	Percentage of Girls Endorsing Item	Percentage of Boys Endorsing Item	Chi Square
I thought the subject would help make me a more well-rounded person.	44	35	7.59**
I thought this class would be challenging.	58	50	5.77*
This class is different from what I usually take.	36	25	13.11***
My school doesn't have anything like this class.	42	31	12.72***
I thought I would do well in this class.	27	34	4.32*

* $p < .05$ ** $p < .01$ *** $p < .001$

Table III

Percentages of Students Indicating Course Selection Criteria as a Function of Area of Study

Course Selection Criteria	Humanities	Language	Mathematics	Science	Chi Square (3, N = 931)
Challenging class	51.37	53.93	54.68	55.97	1.20
Didn't get into another class	22.68	26.97	18.13	25.37	5.27
Different class than usual	42.08	32.58	14.62	35.82	66.14**
Encouraged by parents	15.30	14.61	30.41	22.39	26.66**
Interesting subject	92.08	92.13	62.87	85.82	108.88**
Knew other people in class	9.84	4.49	6.14	2.99	9.12*
Only qualified for this class	1.91	1.12	7.31	2.99	16.29**
Recommended by teachers	4.10	1.12	14.91	7.46	34.39**
School doesn't offer	48.91	47.19	19.88	34.33	70.04**
Thought I would do well	28.14	24.72	33.92	33.58	4.81
To become more well-rounded	46.99	56.18	25.15	42.54	49.06**
Useful subject	53.55	74.16	76.90	62.69	46.16*

* $p < .05$ ** $p < .001$

Table IV

Percentages of Students Indicating Most Important Course Selection Criteria as a Function of Area of Study

Course Selection Criteria	Humanities	Language	Mathematics	Science	Chi Square (3, N = 931)
Challenging class	2.46	4.49	7.02	5.97	8.43*
Didn't get into another class	5.19	7.87	4.97	7.46	2.07
Different class than usual	3.01	0	0.58	1.49	8.23*
Encouraged by parents	1.64	2.25	4.09	0.75	6.46
Interesting subject	60.38	48.31	24.85	45.52	91.53**
Knew other people in class	1.37	0	0.58	0	3.67
Only qualified for this class	0	0	0.76	2.17	5.69
Recommended by teachers	0	0	0.58	0	3.45
School doesn't offer	2.46	2.25	1.17	2.24	1.70
Thought I would do well	0.27	2.25	2.05	1.49	5.20
To become more well-rounded	4.64	5.62	2.34	3.73	3.55
Useful subject	13.11	24.72	50.88	22.39	126.80**

* $p < .05$ ** $p < .001$

Figure Captions

Figure 1. course selection criteria by students enrolled in their first choice class.

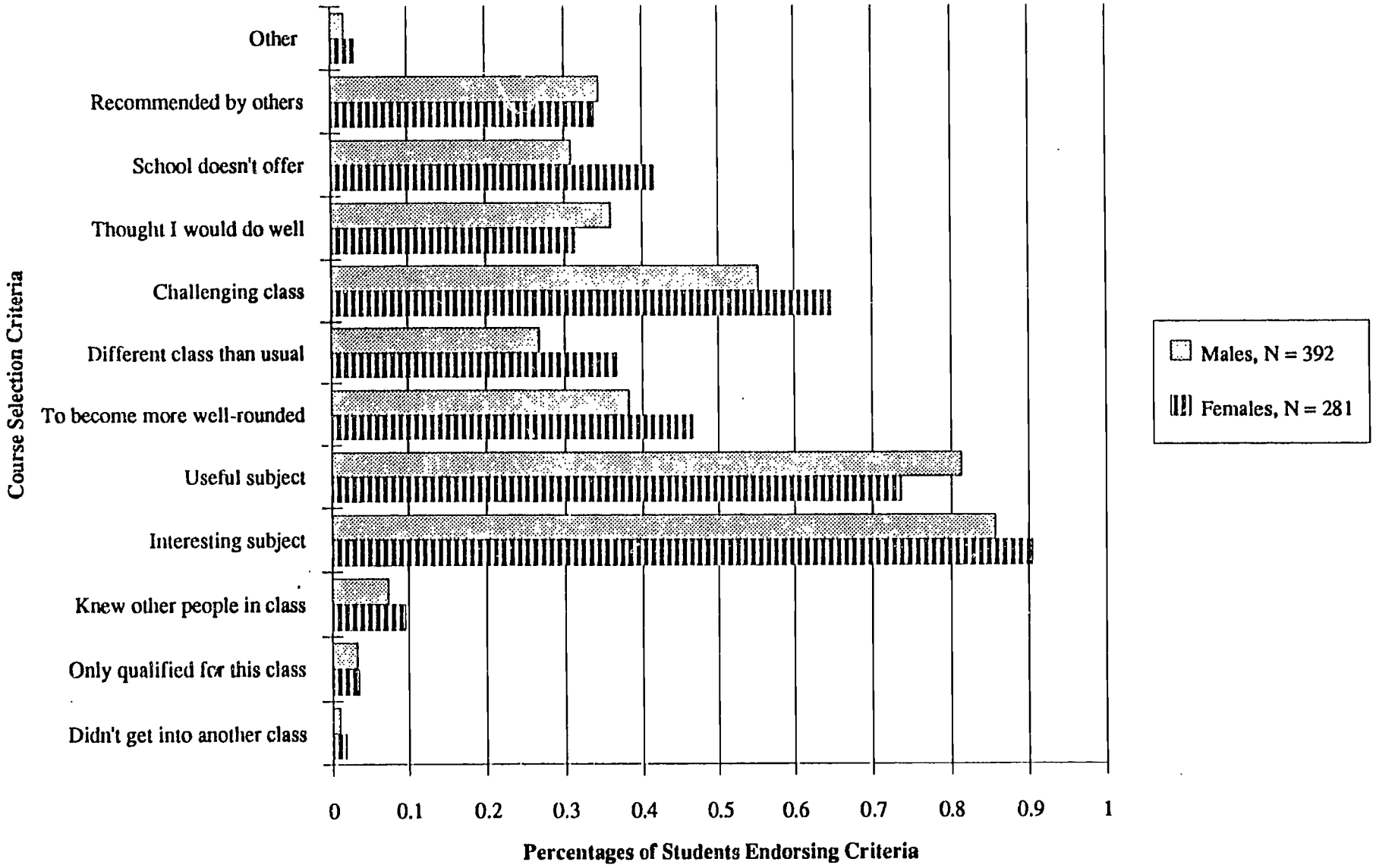
Figure 2. course selection criteria by students enrolled in an alternate-choice class.

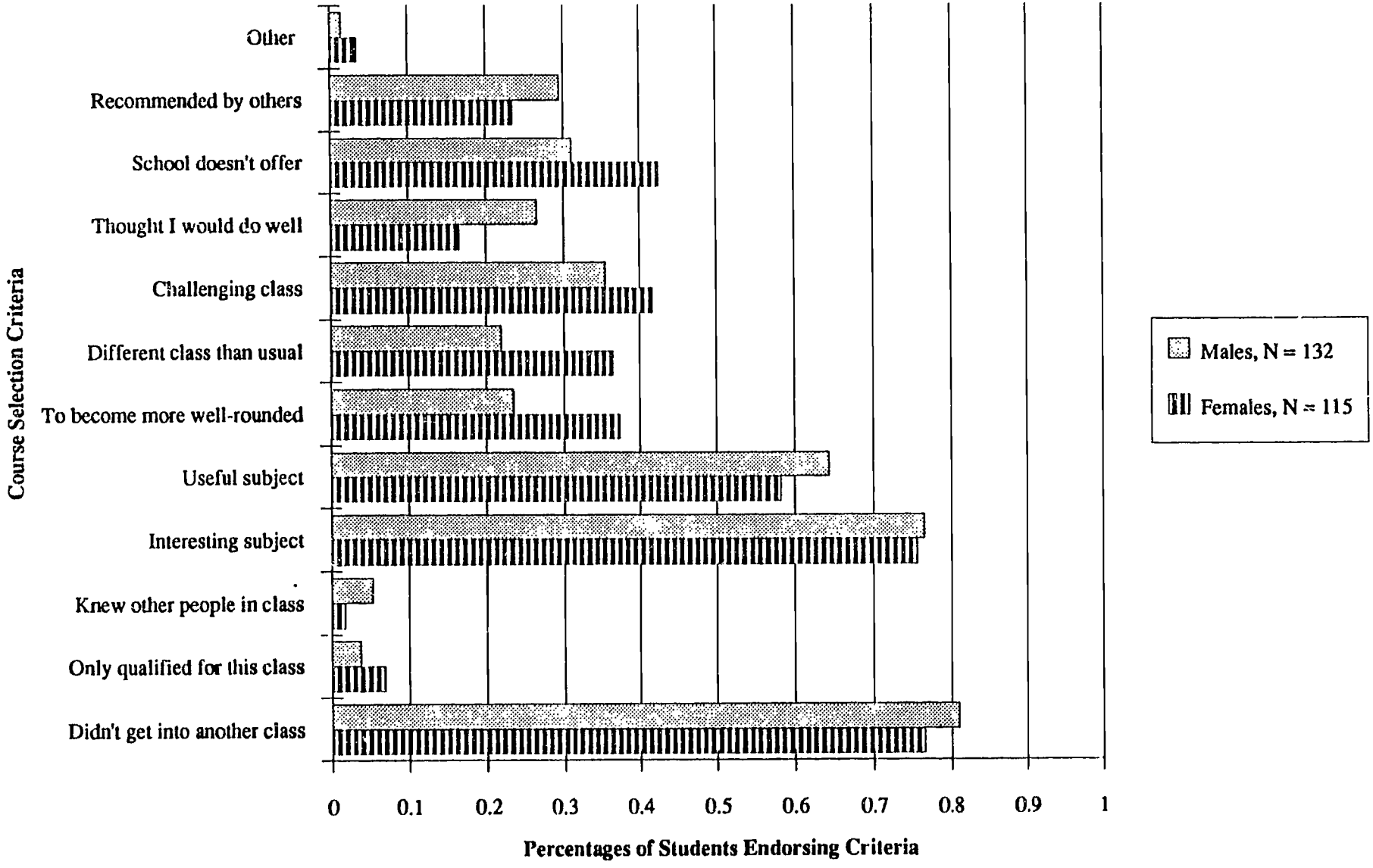
Figure 3. most important course selection criteria by students enrolled in their first choice class.

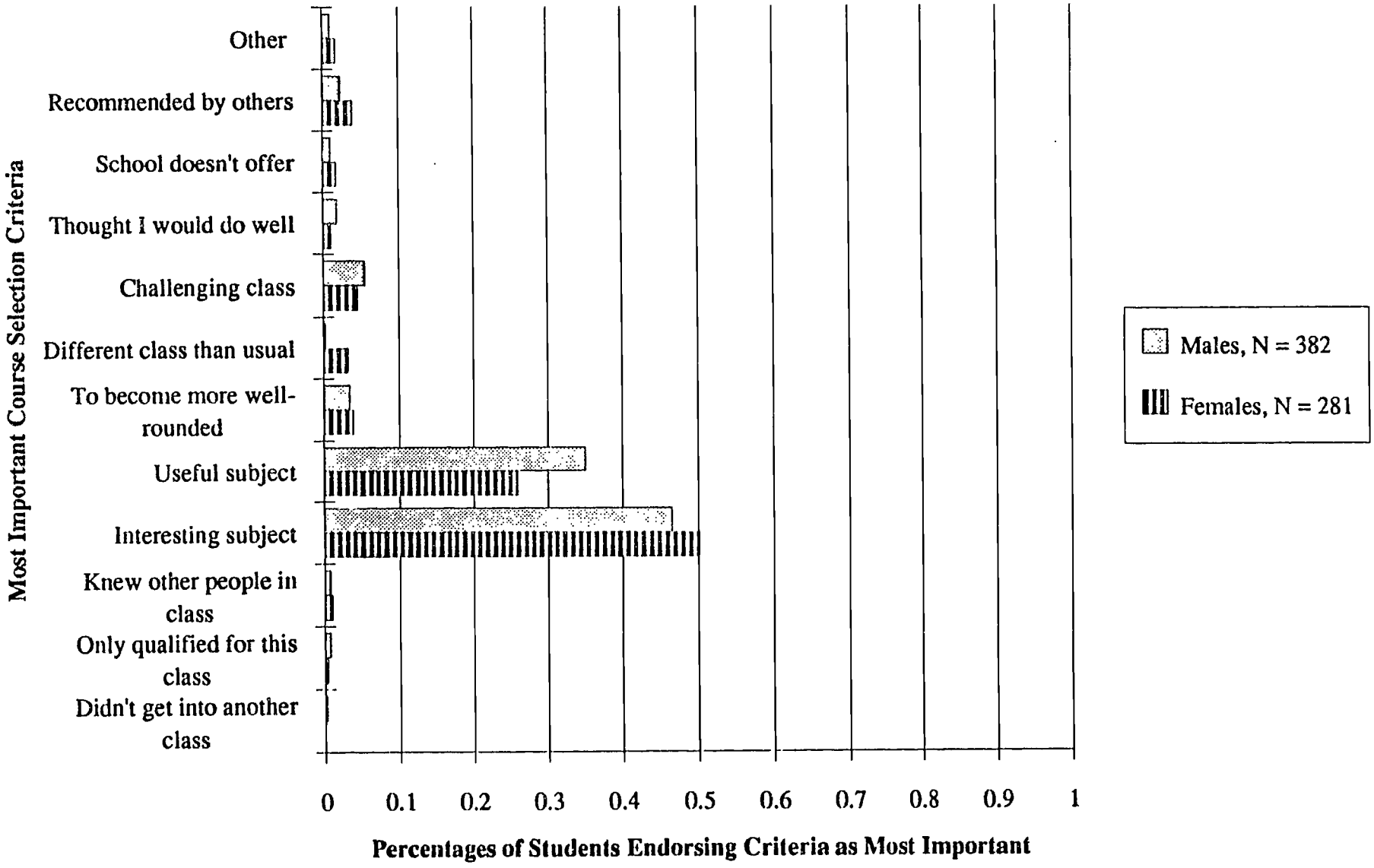
Figure 4. most important course selection criteria by students enrolled in an alternate-choice class.

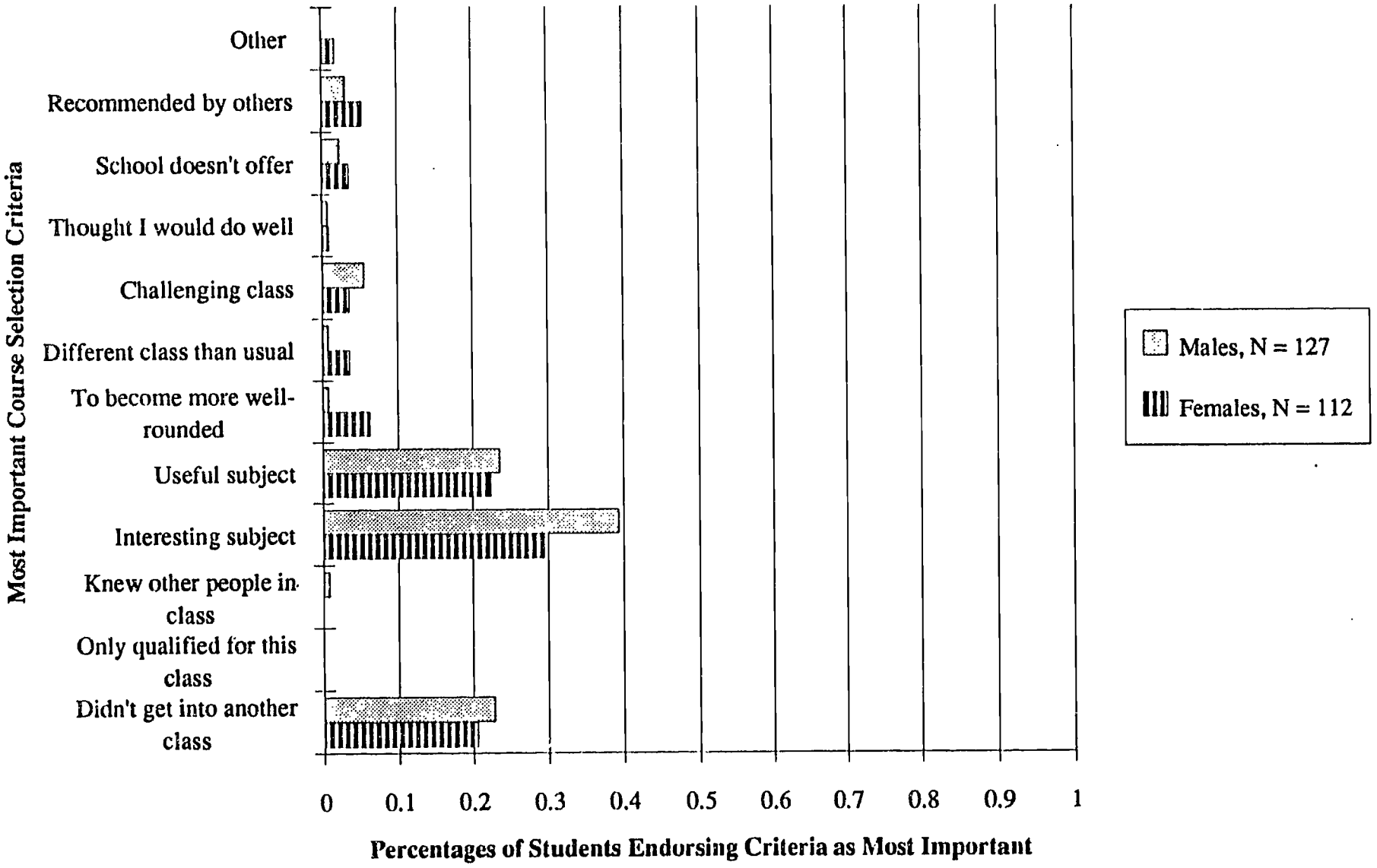
Figure 5. female students' endorsement of most important course selection criteria by area of study.

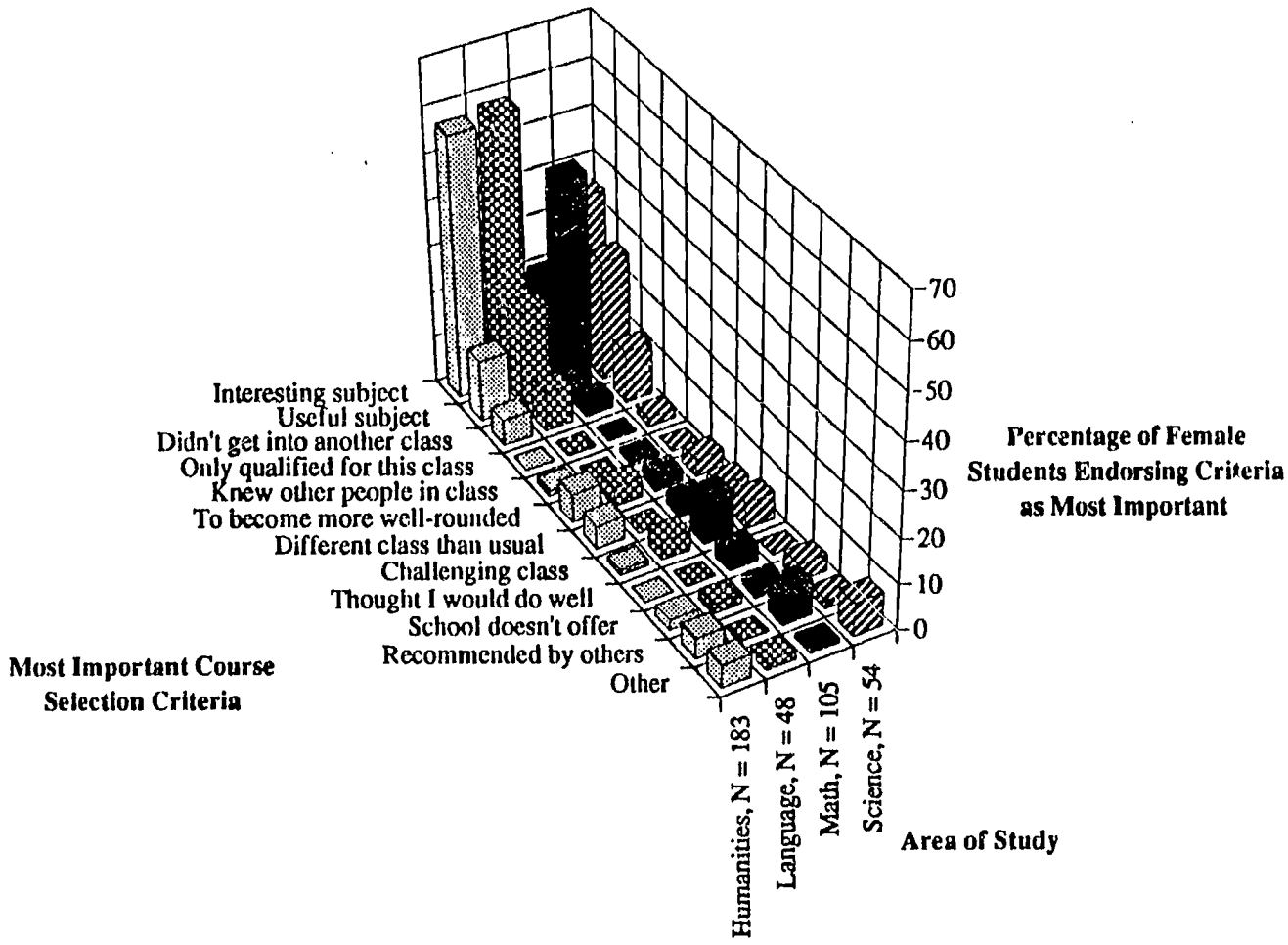
Figure 6. male students' endorsement of most important course selection criteria by area of study.

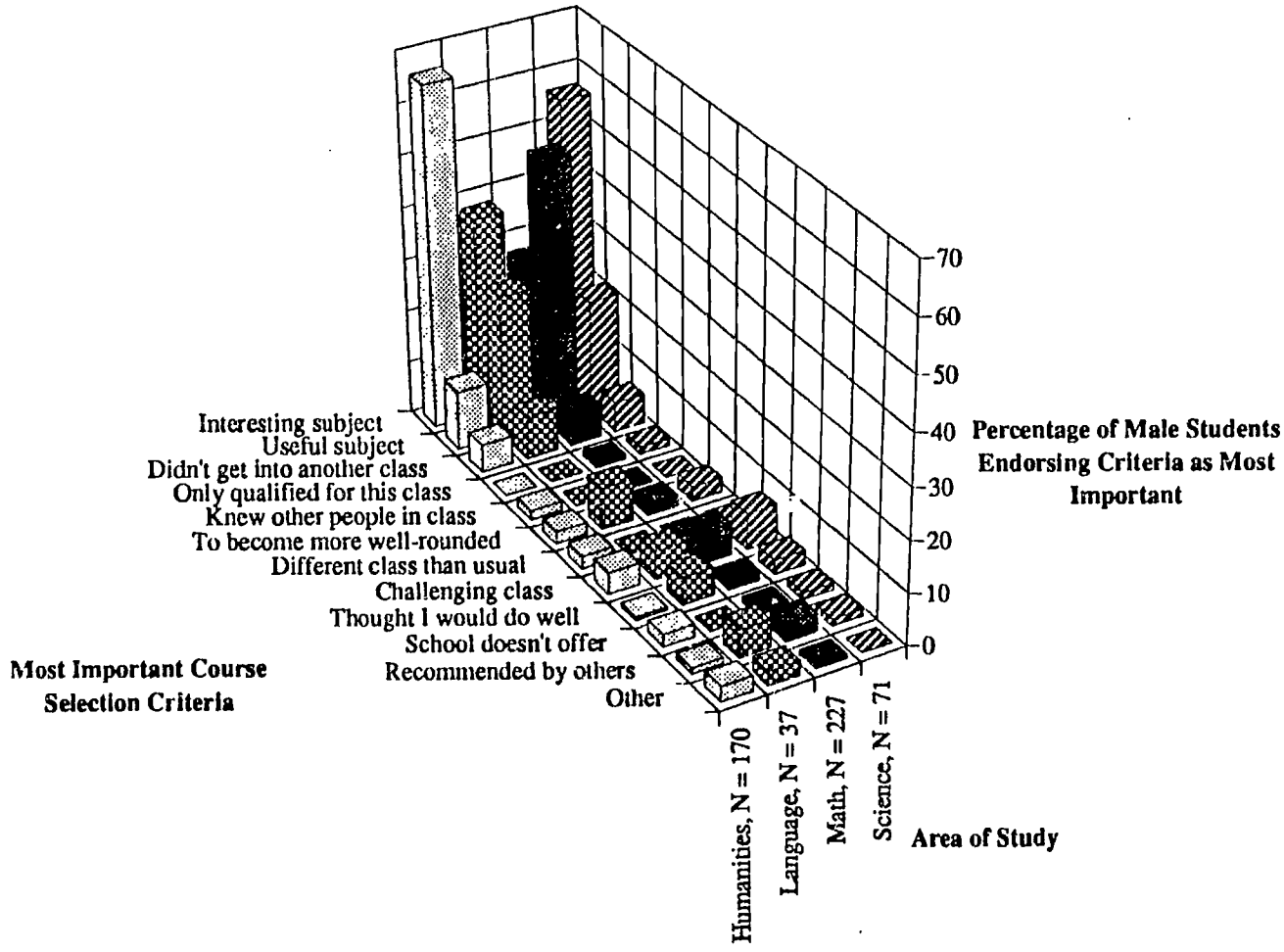

Other
Recommended by others
School doesn't offer
Thought I would do well
Challenging class
Different class than usual
To become more well-rounded
Useful subject
Interesting subject
Knew other people in class
Only qualified for this class
Didn't get into another class
Course Selection Criteria
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Percentages of Students Endorsing Criteria
Males, N = 392
Females, N = 281


Other
Recommended by others
School doesn't offer
Thought I would do well
Challenging class
Different class than usual
To become more well-rounded
Useful subject
Interesting subject
Knew other people in class
Only qualified for this class
Didn't get into another class
Course Selection Criteria
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Percentages of Students Endorsing Criteria
Males, N = 132
Females, N = 115


Other
Recommended by others
School doesn't offer
Thought I would do well
Challenging class
Different class than usual
To become more well-rounded
Useful subject
Interesting subject
Knew other people in class
Only qualified for this class
Didn't get into another class
Most Important Course Selection Criteria
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Percentages of Students Endorsing Criteria as Most Important
Males, N = 382
Females, N = 281


Most Important Course Selection Criteria
Other
Recommended by others
School doesn't offer
Thought I would do well
Challenging class
Different class than usual
To become more well-rounded
Useful subject
Interesting subject
Knew other people in class
Only qualified for this class
Didn't get into another class
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Percentages of Students Endorsing Criteria as Most Important
Males, N = 127
Females, N = 112


Interesting subject
Useful subject
Didn't get into another class
Only qualified for this class
Knew other people in class
To become more well-rounded
Different class than usual
Challenging class
Thought I would do well
School doesn't offer
Recommended by others
Other
Most Important Course Selection Criteria
Humanities, N = 183
Language, N = 48
Math, N = 105
Science, N = 54
Area of Study
70
60
50
40
30
20
10
0
Percentage of Female Students Endorsing Criteria as Most Important


Interesting subject
Useful subject
Didn't get into another class
Only qualified for this class
Knew other people in class
To become more well-rounded
Different class than usual
Challenging class
Thought I would do well
School doesn't offer
Recommended by others
Other
Most Important Course Selection Criteria
70
60
50
40
30
20
10
0
Percentage of Male Students Endorsing Criteria as Most Important
Humanities, N = 170
Language, N = 37
Math, N = 227
Science, N = 71
Area of Study

Academically talented students in an intensive summer program:

Reasons for course selection

Appendix A

TIP End of Course Questionnaire

We're interested in some of your reasons for taking the TIP class you're taking. Please take a few minutes to answer the questions below.

Course _____ Sex ___ Age ___

How many terms have you spent at TIP? How many summers?

Why did you take this class? (Check those that apply.)

___ I didn't get into another class that I wanted.
___ I only qualified for this class.
___ I knew other people in the class.
___ I thought the subject would be interesting.
___ I thought the subject would be useful for my future (college, career, etc.).
___ I thought the subject would help make me a more well-rounded person.
___ This class is different from what I usually take.
___ I thought this class would be challenging.
___ I thought I would do well in this class.
___ My school doesn't have anything like this class.
___ My parents wanted me to take this class.
___ My teacher thought this would be a good class to take.
___ Other (please explain): _____

_____

Go back and circle the one reason that was most important in your decision to take this class.

Did you like this class?

Was this class your first choice?

If you could have taken another class, what would you have liked to take?

Why didn't you take that other class? (Check those that apply.)

___ I didn't qualify.
___ The class was filled.
___ The class wasn't offered when I could take it.
___ TIP doesn't have that class.
___ My parents didn't want me to take that class.
___ I thought another class would be more useful for my future (college, career, etc.).
___ I thought another subject would help make me a more well-rounded person.
___ This class is too similar to the ones I usually take.
___ I didn't think this class would be challenging.
___ I was intimidated by the subject.
___ None of my friends were signing up for that class.
___ I heard bad things about that class.
___ Other (please explain): _____

_____

Go back and circle the one reason that was most important in your decision not to take this class.

Can you suggest any changes TIP could make that would make it a better program? You can use the back of this sheet.