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Students' choice of college major and their perceived fairness of the procedure: evidence from Turkey

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This study investigated the relative influence of factors and persons in college major choice and procedural justice perceptions of 449 undergraduate students enrolled in 1 private and 2 public universities in Turkey. Results showed that students found themselves to be the most influential person in their choice of college major, followed by parents/other family members. With regard to the factors, interest in the subject, guaranteed employment, expected earnings in the field, the university entrance exam score, and a prestigious career were ranked, respectively. Striking differences were found among majors. Findings also suggested that, whereas male and female students' choices were influenced by very similar factors and persons, female students declared more procedural justice.

Keywords: college major choice; procedural justice; higher education; Turkish education

Introduction

For many students, choosing a college or a major is a vital decision determining their entire life plan, success, and professional career. Since the early 1960s, and mostly within the context of the US educational system, several comprehensive studies have been conducted to develop models that uncover factors of importance in such a decision-making process (Chapman, 1981; Hendricks, 1981; Zemsky & Oedel, 1983). While various selection and placement systems are in use internationally, most college students effectively decide their major when they choose an educational institution. The factors affecting their choice such as the reputation of the college, location, cost, socioeconomic status, student expectations, and school size might have different weight in the choice of a major.

Studies that investigate the factors affecting student choice of college major mostly focus on variables such as parental income, education, occupation (Leppel, Williams, & Waldauer, 2001; Simpson, 2003; Turner & Bowen, 1999), gender difference (Malgwi, Howe, & Burnaby, 2005; Maple & Stage, 1991; Staniec, 2004), personality type (Allen & Robbins, 2008; Pike, 2006; Trusty, Ng, & Ray, 2000), previous experience (Trusty, 2002; Turner & Bowen, 1999), interest in the major

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(DeMarie & Aloise-Young, 2003; Malgwi et al., 2005), and expected future earnings in the field (Cebula & Lopes, 1982). Ethnic background (Daly, 2005; Maple & Stage, 1991; Staniec, 2004) and political orientation (Porter & Umbach, 2006) have also been among the variables that have received attention in the literature.

Among the factors identified above, subject matter and value of the major were found to be two dominant factors influencing the choice of a major. Beggs, Bantham, and Taylor (2008) found that students declared match with interest as the most important reason in choosing a major. DeMarie and Aloise-Young (2003) reported that interest in the field played a more effective role for education students than for business students. In a cross-national study by Papanastasiou and Papanastasiou (1997), it was found that, whereas students in the USA regarded internal motives as the most influential factor for the choice of elementary teaching profession, students in Cyprus considered external factors as the strongest influence. The authors suggested that this might be due to differences in the extrinsic benefits available to elementary teachers in the two countries. Waller's (2006) examination of the relationship between African-American college students' mathematics interest and their choice intention provided a strong correlation between these two variables.

Internationally, gender has been a strong factor in student choice of major. Malgwi et al. (2005) found that women tended to give more importance to aptitude in the subject than men. Harton and Lyons (2003) found that students with higher empathic concern and greater tendency to take other people's perspectives are likely to choose psychology. However, Daly (2005) found no gender difference to majoring in accounting in terms of advice from family and advice from friends. Trusty et al. (2000) also observed a strong effect of gender, with females choosing more social majors.

Numerous studies have also examined the causal chain relationship leading from college major and job-field congruence to job satisfaction (Fricko & Beehr, 1992; Oleski & Subich, 1996; Smart, Elton, & McLaughlin, 1986; Wolniak & Pascarella, 2005). In a recent study, Wolniak, Seifert, Reed, and Pascarella (2008) examined whether the effects of background and pre-college characteristics such as gender, parents' education, and income differed in terms of college major, taking earnings as the social status indicator. The authors found that college major had a determining effect on individuals' placements as well as their movements along the social ladder.

The works we have cited above provide substantial evidence in understanding key factors that affect a student's choice of a major. However, since choosing a college major is a typical decision-making process, we thought it was important to go further than simply identifying factors and persons affecting this process, and examine the process-based perceptions of students. Galotti et al. (2006) uncovered some aspects of this neglected topic in the literature. The authors investigated the nature of the decision-making process of undecided college students for major choice and found that individual differences occurred not in the way students gathered or structured information but rather in the way they conceptualized and reacted to the process. Auyeung and Sands (1997) examined the effect of individualism and collectivism variables on the career choice of accounting students from different cultural background and found significant differences between Australian accounting students who represented individualism and Chinese and Taiwanese students who represented collectivism.

Procedural justice and choice of a major

Justice is a universal human concern which scope is very wide. Institutions, organizations, procedures, allocations, principles and rules, and relationships might be subject to issues of justice. With increasing interest in its normative and empirical investigation, theorists and researchers alike have tried to understand the organizational structure and form of just and stable societies and institutions. About the empirical investigations of justice, whereas Adams' equity theory (1965) had a stimulating effect on the literature, two works have made substantial contributions to sociopsychological studies of procedural justice, which has been widely used to refer to the perceived fairness of any organizational decision-making process. Thibaut and Walker (1975) suggested that process control and decision control are the two main factors that affect the perceived fairness of any procedure. In general, the more control people have over the procedure, the higher is the perceived fairness of the outcome. Leventhal (1980) provided ample opportunity for researchers to extend their studies to include different organizations, institutions, and relations. Leventhal proposed six justice rules for fair procedures: consistency, bias suppression, accuracy, correctability, representativeness, and ethics.

Subsequent studies extended the early measures by including dimensions such as the influence of voice and respect as the criteria for process control and decision control relevant to a specific context (Lind, Kanfer, & Early, 1990; Moorman, 1991; Tyler & Blader, 2002; Tyler & Lind, 1992). Moreover, some others developed items that measure a global perception of justice (Fondacaro, Jackson, & Luescher, 2002). Since the 1990s, while empirical studies of justice have been directed to the so-called interactional justice wave which focuses more on the quality of interactional communication and treatment among the parties, more recent works have aimed at building models and theories combining multiple justice dimensions to examine the relative effects of each (Colquitt, Greenberg, & Zapata-Phelan, 2005).

The process of selecting a major is a matter of justice not only because it substantially affects the life plan of students, but also because the parties who take part in this decision-making process can have conflicting demands and claims. The fairness of the students' decision-making process depends on how people treat them, the existence of options available, the extent of guidance available, and the overall fairness of the procedure in question.

The context of the study

Career choice is an important decision for students, especially in countries where change of major during college education is restricted and social mobility after graduation depends, to a great extent, on educational background. This study was conducted in such a context. The current population of Turkey is 72 million, and the country has 94 public and 38 private universities, most of which are recently established. The system is very competitive, with approximately 1.8 million high school graduates applying for placement in higher education institutions each year. In 2009, only 206,166 students were placed in 4-year or longer undergraduate programs, 270,466 in 2-year vocational training schools, and 168,667 in open education programs (OSYM, 2009).

In the Turkish educational system, students are selected and placed in universities by a central examination system administered by the Student Selection and Placement Center (OSYM), which is a part of The Higher Education Council (YOK). Students are required to choose their majors at entry. Currently, only three private universities allow students limited opportunity to major in general categories such as social sciences, natural sciences, or engineering at the end of their first year. Otherwise, the placement system requires students to make 24 selections to rank their preferences for higher education programs in public and private universities, 3–4 weeks after the General Student Selection and Placement Exam. Once accepted into a program, students can only change their choice of major if they retake the entry exam in the following year. This practice is discouraged by the imposition of a penalty, which reduces the scores of such students and limits their opportunity to subsequently secure a place of their choice.

In Turkey, tuition fees are a relatively unimportant determining factor for the choice of majors in public universities or higher education institutions. Students pay the same amount for the same majors across the country: approximately 700 US dollars for the most expensive program per annum. For private universities, however, this amount varies between 6,000 to 20,000 US dollars depending on the major and university.

The purpose of the study

Most of the studies relevant to the main variables of this study were conducted in Western cultures or in non-educational settings. While the relevance of procedural and distributive justice studies to education was indicated by some scholars (Kravitz, Stone-Romero, & Ryer, 1997), very few studies have been conducted in educational settings (Hartman, Yrle, & Galle, 1999; Kravitz et al., 1997). To provide cross-cultural evidence, first, we examined the underlying factors that affected students' choice of a major and the relative influences of the persons who had a role in this process. Our second aim was to understand the process-based perceptions of students' decision-making process.

Method

Sample

The participants were first-year students enrolled in various departments of two public universities and one private university. The selection of the sample was decided by urban/rural, public/private distribution and school size range of universities in Turkey and the college majors studied. The sample included 171 men (38.1%) and 278 women (61.9%). Given the regulations of the Turkish higher education system, all students selected their majors according to the central placement at entry; therefore, all participants were decided students.

Instruments and procedures

The research packet included a total of 27 items, a demographic sheet, items measuring *Persons and Factors Affecting the Choice of a Major*, and the *Procedural Justice Scale*.

Persons and factors affecting the choice of a major

Students were asked to indicate, on a 5-point Likert scale ranging from 1 (*not influential at all*) to 5 (*totally influential*), the relative degree of influence that factors and people around them had on their decision in choosing a major. Four items asked “*who* were influential in your decision of a college major?”, and nine items asked “*what factors* were influential in your decision of a college major?”

The Procedural Justice Scale

This scale consists of seven items developed from the literature (Fondacaro et al., 2002; Johnson, Korsgaard, & Sapienza, 2002; Kravitz et al., 1997; Tang, Li, & Sarsfield-Baldwin, 1996). Participants responded to each item on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The psychometric properties of different versions of the Procedural Justice Scale have been extensively studied in the literature.

Data collection occurred at the beginning of the Fall semester in the 2008–2009 academic year. Students completed the questionnaire in a classroom setting. The questionnaire package included a consent letter detailing the purpose of the study, the content of the questionnaire, and assurance that the data would remain confidential and anonymous.

Results

In order to identify the influence of persons and factors in students’ choice of a college major, their responses to 13 items were examined against demographic variables. Results showed that the most influential person was students themselves in their choice of a major ($M = 3.96$, $SD = 1.21$). This was followed by parents/other family members ($M = 2.86$, $SD = 1.32$), high school/preparation school teachers ($M = 2.38$, $SD = 1.33$), friends/other relatives ($M = 2.06$, $SD = 1.27$). Of the nine factors affecting their choice, students rated interest in the subject, guaranteed employment, expected earnings in the field, university entrance exam score, and prestigious career as highest, followed by family expectations, limited major choice, pressure by nearby people, and possibility of getting financial aid (Table 1).

Each of the 13 items was also examined by gender. The results of the t test between male and female students showed that earning was significantly different at 0.05 level, whereas other variables showed no differences. This indicates that male and female students had very similar influencing factors when they chose their college major.

Since the Procedural Justice Scale used in this study was adopted from the existing literature for the specific purpose of examining students’ perceptions in the educational decision-making setting, it was necessary to examine its reliability and validity. An exploratory factor analysis with *varimax* rotation (Cureton & Mulaik, 1975) was used to investigate the factor structure of the scale. The Kaiser–Meyer–Olkin measure of sampling adequacy was .87, indicating a high level of correlation among the items. Factor analysis of seven items indicated a single-factor structure for procedural justice, accounting for 53.53% of the total variance. All variables were well defined by this factor solution. The results indicated a satisfactory internal

consistency for the scale's items (Cronbach's Alpha = .84). The means and standard deviation for the scale items are given in Table 2.

We then examined gender differences in terms of procedural fairness. The results are summarized in Table 2. *t* Test comparisons of male and female students with regard to the perceived fairness of the procedure revealed that female students

Table 1. *t* Test results for the relative effects of persons and factors.

	Total		Male		Female		<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Self-decision	3.96	1.21	3.85	1.22	4.02	1.22	.153
Parents/other family members	2.86	1.32	2.78	1.34	2.91	1.32	.351
High school/preparation school teachers	2.38	1.33	2.24	1.29	2.47	1.36	.083
Friends/other relatives	2.06	1.27	2.11	1.32	2.03	1.24	.552
Interest in subject	3.57	1.39	3.51	1.38	3.60	1.41	.488
Guaranteed employment	3.57	1.26	3.47	1.17	3.64	1.32	.177
Expected earnings in the field	3.55	1.26	3.39	1.18	3.65	1.30	.031
Pressure by nearby people	1.72	1.13	1.78	1.12	1.68	1.14	.376
Family expectation	2.99	1.35	2.99	1.33	2.99	1.38	.994
University Entrance Exam score	3.54	1.36	3.47	1.39	3.59	1.35	.408
Prestigious career	3.48	1.37	3.41	1.33	3.53	1.40	.351
Possibility of getting financial aid	1.47	.97	1.45	.92	1.48	1.00	.707
Limited major choice	1.90	1.32	1.99	1.37	1.85	1.30	.288

Table 2. Procedural fairness items' means and standard deviations (*n* = 423).

	Total		Male		Female	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>I was provided enough guidance in my decision-making process by the parties who took part in my choice.</i>	3.43	1.27	3.16	1.32	3.55	1.24
<i>I was given the opportunity to state my own ideas and feelings in my decision-making process.</i>	4.12	1.01	3.94	2.02	4.22	1.00
<i>I am satisfied with the procedure I experienced in my decision-making process.</i>	3.77	1.13	3.60	1.13	3.85	1.14
<i>People who took part in my decision-making process treated me with respect.</i>	4.08	.98	3.99	1.00	4.11	1.00
<i>The procedure of my decision-making process was under my control.</i>	3.93	1.18	3.89	1.14	3.91	1.24
<i>Looking back, the things I experienced in my decision-making process were fair.</i>	3.76	1.13	3.71	1.15	3.79	1.14
<i>I cannot imagine a better decision-making procedure under the existing conditions.</i>	3.49	1.33	3.32	1.36	3.55	1.34

($M = 3.86$; $SD = .87$) scored significantly higher than male students ($M = 3.65$; $SD = .78$) on the total scale ($t(445) = 2.39, p < .05$).

We used Chi-Square analysis to examine the relationship among departments by grouping majors into 11 categories (Table 3): (1) Economic and Administrative Sciences (EAS), (2) Law, (3) Nursing (Nurs.), (4) Social Sciences (SS), (5) Engineering (Eng.), (6) Science Education (SE), (7) Math and Natural Sciences (MNS), (8) Medicine (Med.), (9) City and Regional Planning (CRP), (10) Computer Education and Instructional Technology (CEIT), and (11) Elementary Education (EE). The results indicated that 10 of the total of 13 factors had a significant effect on college major choice for students attending different departments.

The decision-making process of college students at entry was largely determined by their own judgments, based heavily on the most influential factors of “interest in the subject”, “guaranteed employment”, “expected earnings in the field”, “university entrance exam score”, and “prestigious career”. However, the weight and order of these five factors varied for different majors. For nursing students, the variable “interest in the subject” and for medical students “university entrance exam score” were not included among the top-five factors. Another interesting result was that “university entrance exam score” was ranked first by EE, SE, and CRP majors. For the variable “prestigious career”, the highest mean responses were received by law students, followed by medical and engineering students.

Discussion and conclusion

This study provides cross-cultural evidence about the factors and persons that influence college major choice in Turkey. We found that interest in the subject, guaranteed employment, and expected earnings after graduation are the most influential factors for college major choice. In general, these results are similar to the findings obtained by DeMarie and Aloise-Young (2003), Malgwi et al. (2005), Cebula and Lopes (1982), and Papanastasiou and Papanastasiou (1997). However, contextual factors are likely to influence the relative effects and the order of these primary factors. Our findings suggest that employment opportunity after graduation plays an important role in students' decision. The mean score of students among different majors with regard to the effect of guaranteed employment reflects current job opportunities in Turkey. For example, according to the State Planning Organization (SPO), in order to reach the mean standards of the WHO for Europe, the country should double the current number of physicians and nurses by 2023 (SPO, 2006). Job vacancies for teachers vary extensively among different subjects in Turkey. While primary school teachers are moderately in demand in public and private schools, there are approximately 8 to 10 times more graduates of science education majors than there are annual employment openings. The influence of these external factors was probably effective in students' choice of a major. In particular, the affecting factors identified by nursing students were typical, with the lowest rate being interest in major and the highest one guaranteed employment. These results support Cebula and Lopes' (1982) suggestion that expected earnings are important in college major choice and students are “responsive to changing monetary incentives in the labor market for graduates” (p. 310).

While our work replicates previous findings in a number of ways, it does not cohere with many others with regard to its variables. The most salient result of our data has been that, although men and women were not significantly different in

Table 3. Means, standard deviations, and χ^2 results for different majors.*

	M											χ^2	p	
	Total	EAS	Law	Nurs	SS	Eng	SE	MNS	Med	CRP	CEIT			EE
Self-decision	3.96 (1.22)	4.05 (1.17)	4.23 (1.16)	3.59 (1.24)	4.00 (1.30)	4.13 (1.12)	3.88 (1.09)	4.29 (.72)	4.40 (1.06)	4.00 (1.16)	3.00 (1.47)	3.97 (1.22)	23.41	.009
Parents/other family members	2.86 (1.33)	2.88 (1.47)	2.61 (1.32)	3.10 (1.26)	2.80 (1.65)	2.66 (1.07)	3.09 (1.21)	2.66 (1.09)	3.47 (1.30)	2.31 (1.18)	2.79 (1.41)	3.31 (1.20)	24.48	.006
High school/preparation school teachers	2.38 (1.34)	2.22 (1.27)	2.71 (1.50)	2.35 (1.23)	3.03 (1.40)	2.09 (1.15)	2.24 (1.27)	2.62 (1.32)	2.33 (1.29)	2.16 (1.27)	1.71 (1.12)	2.35 (1.35)	19.80	.031
Friends/other relatives	2.06 (1.27)	2.22 (1.44)	1.89 (1.21)	2.20 (1.09)	2.23 (1.49)	1.91 (1.23)	1.82 (1.21)	1.71 (1.10)	1.93 (1.03)	2.09 (1.19)	2.04 (1.40)	2.23 (1.32)	7.26	.700
Interest in the subject	3.57 (1.40)	3.56 (1.33)	4.15 (1.21)	3.00 (1.46)	3.95 (1.41)	3.68 (1.27)	2.38 (1.44)	4.25 (.97)	4.20 (1.21)	3.68 (1.16)	3.04 (1.43)	3.52 (1.38)	46.24	.000
Guaranteed employment	3.57 (1.26)	3.50 (1.25)	3.77 (1.03)	4.44 (.95)	2.89 (1.48)	3.50 (1.08)	2.59 (1.30)	3.33 (1.37)	4.13 (1.19)	3.25 (1.20)	3.88 (1.15)	3.91 (1.05)	48.10	.000
Expected earnings in the field	3.55 (1.26)	3.60 (1.31)	3.75 (1.09)	4.25 (1.08)	3.10 (1.60)	3.84 (.95)	2.64 (1.17)	3.25 (1.21)	3.93 (1.22)	3.36 (1.11)	3.88 (1.12)	3.53 (1.26)	39.82	.000
Pressure by nearby people	1.72 (1.14)	2.00 (1.41)	1.67 (1.10)	2.05 (1.20)	1.41 (1.16)	1.69 (1.09)	1.64 (1.05)	1.67 (.90)	1.80 (1.26)	1.31 (.71)	1.58 (.93)	1.94 (1.20)	14.74	.142
Family expectation	2.99 (1.36)	3.13 (1.47)	3.10 (1.39)	3.15 (1.31)	2.61 (1.50)	2.75 (1.34)	3.00 (1.17)	3.00 (1.41)	3.13 (1.30)	2.51 (1.24)	2.79 (1.44)	3.43 (1.23)	17.60	.062
University Entrance Exam score	3.54 (1.37)	3.22 (1.56)	3.63 (1.48)	3.60 (1.23)	2.75 (1.50)	3.06 (1.46)	3.91 (1.19)	3.70 (1.22)	2.93 (1.49)	3.77 (1.19)	3.21 (1.41)	4.07 (.95)	31.98	.000
Prestigious career	3.48 (1.37)	3.59 (1.33)	4.22 (1.11)	3.08 (1.53)	3.00 (1.58)	3.78 (1.13)	3.25 (1.44)	2.79 (1.32)	4.00 (1.31)	3.04 (1.17)	3.79 (1.38)	3.59 (1.28)	38.56	.000
Possibility of getting financial aid	1.47 (.97)	1.56 (1.07)	1.35 (.88)	1.27 (.59)	1.46 (1.07)	1.65 (1.14)	1.30 (.73)	2.06 (1.52)	2.07 (1.39)	1.20 (.56)	1.38 (.92)	1.59 (1.05)	20.19	.027
Limited major choice	1.90 (1.33)	1.81 (1.25)	1.73 (1.22)	1.68 (1.08)	2.15 (1.63)	1.74 (1.18)	1.71 (1.03)	1.32 (.82)	1.20 (.56)	1.82 (1.29)	2.83 (1.74)	2.23 (1.39)	26.05	.004

*Standard deviations are in parentheses.

terms of the relative effect of factors and persons, including themselves, women reported more procedural justice for their decision-making process. With respect to associated factors in choosing a college major, male and female students were very similar. This finding is not in line with the dominant gender role theory that, compared to women, men are more self-reliant, self-sufficient, independent, and self-confident (Eagly, 1987; Eagly & Karau, 2002; Wood & Eagly, 2002). Though statistically insignificant, our study indicates that, compared to men, female students made their decisions relying more on their own judgments, suggestions, and advice from their families. A possible explanation for the lack of gender difference in the affecting factors and persons could be that Turkish students usually experience and share very similar educational settings and information resources, and they start to focus on the University Entrance Exam some years before taking it.

This study indicated that, while choosing a major is a course of individual action, some other parties participate and have a role in this decision-making process, whether directly or not. Our results suggest that students are highly self-autonomous in their decisions, yet the role of close persons is still important. For example, whereas medical students ranked the highest score among all majors for the influence of parents, for nursing and science education students the influence of parents was higher than the influence of their interest in the subject. The role of family expectation was also significantly different among different majors. This result is inconsistent with that of Malgwi et al. (2005) and Strasser, Ozgur, and Schroeder (2002), who found that parents are not particularly influential in the initial college major choice.

In general, students assigned a low influence to the existence of a limited number of major choices given to them. There was however a striking meaningful difference between computer education and instructional technology (CEIT) students, most of whom graduated from technical and vocational schools, and students majoring in other areas. It should be noted that technical and vocational high school students are restricted in their choice of major by the Turkish higher education placement system. When this study was undertaken, technical and vocational high school students were not given an equal chance to major in many areas including medicine, engineering, law, and natural and social sciences. This study is further evidence that technical and vocational high school students are disadvantaged by the system, an issue that has long caused controversy in Turkey. Recently, the Turkish Higher Education Council has made two attempts to reduce the disadvantaged position of technical and vocational high school students, but the Council of State, the highest administrative court in Turkey, cancelled these amendments.

Our findings can not be generalized as the study was conducted in the context of a higher education placement system in which all applicants had to declare their majors before entrance to university. In this regard, the context of the study is incomparable with North American universities, where students are not required to declare a major until the end of their freshman year. Moreover, the current placement system in Turkey relies on a single University Entrance Exam to appraise students from differing school types (general, technical or vocational, etc.) and areas of study (Science, Turkish and Math, Social Sciences, foreign languages, etc.). It should be noted that the relative influence of the university entrance exam score ranked the fourth highest factor among the 13 variables. Furthermore, this factor was ranked first by science education, city and regional planning, and elementary

education majors. As Turkish students are limited both by available places at universities and the number of preferences they can indicate under the national centralized placement system, the higher their score the better their chances of securing a preferred major or department. It is very likely that for many students, their current major was their second best preference, or lower.

The findings of this study are based on the data obtained from the self-report replies of students attending three universities which were moderately selective in their admission criteria, and no statistically significant differences were examined among the participating schools. More research with larger samples of students from more and less selective universities is needed to see whether there are statistically significant differences across institutions for the variables studied here. Further qualitative research would be valuable in exploring the underlying reasons behind students' decisions in more detail.

Although some results obtained here are context dependent, the study can help our understanding of college major choice in other countries. Our findings indicate that choosing a college major is a complex phenomenon and many factors and persons are effective in this decision-making process. In particular, we found that when students choose their majors under the stress of competition and limitations of the system, their decisions are mainly determined by existing job opportunities and interest in the subject is likely to play merely a subordinate role. This study may be useful to educational administrators and policy-makers in revising existing principles or developing selection and placement systems to increase the number of students in colleges with more interest in their subject.

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