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AUTHOR	Flaxman, Erwin; Guerrero, Anabelle; Gretchen, Denise
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ABSTRACT

The effects of attending an urban career magnet high school were examined by comparing the career development of 51 graduates of 4 career magnet high schools and 59 graduates of 4 comprehensive high schools in a large city. Subjects were drawn from a database through a random assignment and matching process. All 110 graduates were surveyed using closed-ended (Likert scale and yes/no) structured interviews. Graduates of career magnet schools were 30% more likely than graduates of comprehensive high schools to perceive that their parents would be willing to make sacrifices to send them to college. Career magnet school graduates were also 19% more likely to believe that they would be in their desired career within the next 6-10 years. The career magnet students were more likely to have a best friend with a career interest and were thus very likely to have been exposed to an environment where career thinking and career planning were the norm. It was concluded that attendance at a career magnet school may itself have affected parents' assumptions about the seriousness of their child's efforts. Career magnet schools were found to create a social climate that helps youth acquire the social capital needed for career development. The need for more adult influences suggests that magnet schools should provide more opportunities for youth to enlarge their social networks, supplementing their family and community background. (Contains 34 references.) (MN)

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National Center for Research in
Vocational Education

University of California, Berkeley

CAREER DEVELOPMENT EFFECTS OF CAREER MAGNETS VERSUS COMPREHENSIVE SCHOOLS

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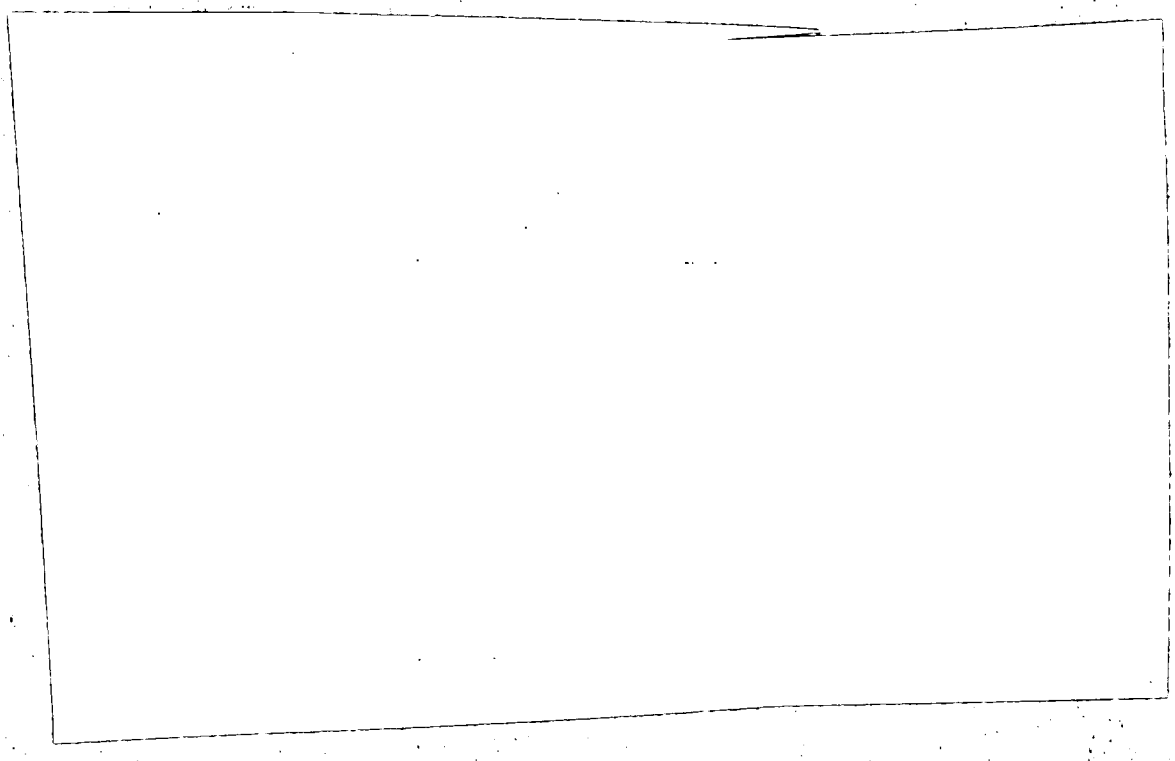

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Erwin Flaxman
Annabelle Guerrero
Denise Gretchen

Teachers College, Columbia University

National Center for Research in Vocational Education
University of California at Berkeley
2030 Addison Street, Suite 500
Berkeley, CA 94720-1674

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EXECUTIVE SUMMARY

This study investigated the institutional and social and psychological effects of attending an urban career magnet high school. It was designed particularly to examine the differential impact of the curriculum and instruction in the school, students' extracurricular experience, work experience while in school after graduation, peer relationships while in school, and family attitudes toward schooling on the postsecondary education and career development of the career magnet and comprehensive high school graduates. To determine these effects, the study used a random assignment database, created by a lottery mechanism used to assign seats in the oversubscribed magnet schools.

The subjects of the study were 110 graduates of four career magnet high schools and four comprehensive high schools in the city. A total of 51 students who attended and graduated from a career magnet high school—the "lottery winners"—and 59 who attended and graduated from a comprehensive high school—the "lottery losers"—were included in the study. Because the subjects were drawn from a database for the study constructed in an experimental design format, the graduates were selected in pairs in which one graduate was randomly admitted to a city career magnet school while the other was randomly rejected from the same school, and subsequently attended and graduated from a comprehensive high school. In our study, then, the random selection process assured group equality and eliminated the initial differences between the groups known as selection bias. Since the pairs of graduates were constructed by random assignment and matching, any consistent difference between career magnet and comprehensive high schools can be attributed to the schools they attended. All 110 graduates were surveyed using closed-ended (Likert scale and yes/no) structured interviews.

The study revealed that the influence of the career magnet student is transmitted through peer relationships and parent support. The career magnet students were more likely to have a best friend who had a career interest, and, thus, very likely to have been exposed to an environment where career thinking and career planning were the norm. It was also revealed that a student who graduated from a career magnet high school was 30% more likely than a comprehensive high school graduate to perceive that his or her parents would be willing to make sacrifices to send him or her to college. These same students were 19% more likely to believe that they would be in their desired career within the next six to ten years. It can be assumed, then, that attendance at the career magnet high school itself may

have led to parents' assumptions about their child's seriousness of efforts because it required extra physical and academic effort to attend. This, coupled with other variables in the model, such as career confidence, avoidance of at-risk behaviors, and career-related college plans, likely led to parental commitment to the student's education.

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INTRODUCTION

Magnet schools have been part of the U.S. educational system for a number of years, first as a desegregation strategy, and now as one of a variety of focus schools with a curriculum theme, course content, specific pedagogy, special allied activities, student selection policies, scheduling procedures, or school organization that attract or "magnetize" students and teachers with interests in the school's theme and practices. In principle, magnet schools project a clear educational ideal and goal for the students. In no magnet schools is this recognizable outlook more prominent than in the increasing number of career magnet schools nationally.

One of the purposes of high school is to prepare students for life and work. Those who oppose traditional comprehensive high schools often ask, "How can schools where students merely master academic (or general) knowledge and perform under rote conditions to meet universal requirements have a beneficial effect on students' adult educational and occupational attainment?" (Jencks et al., 1972). Career magnet schools represent an important alternative to comprehensive high schools. By combining career preparation with traditional college preparatory courses, students interested in career opportunities do not have to choose between college and an entry-level job after high school graduation. What is more, the career magnet schools can draw students from neighborhoods of various income and ethnic populations; thus, they not only can improve the quality of education but also can advance the values of diversity and educational equity throughout a school district (Blank, 1989).

From research carried out by Crain, Heebner, & Si (1992) in high schools in a large city we now know that attending a career-oriented magnet school positively affects student outcomes, as measured by grades and attendance—but not dropout rates (Crain & Thaler, 1997)—when compared with the academic outcomes of students attending comprehensive high schools. But there are further questions to be answered: Do career-oriented magnet schools, as compared with comprehensive high schools, also positively affect the career development process? And will there be differences in career development outcomes for the students attending each type of school that can be attributed to the practices in the schools?

This paper is a report of a study of the effects of career magnet high schools on the development of an educational and career orientation of the graduates of career magnet high schools. In conducting the study, we hypothesized that students in the career magnet would be exposed to more directly relevant and better-integrated influences on their career development. This would mean that students in career magnet schools would differ from their comprehensive school counterparts in an array of psychological achievements and behavioral and educational outcomes.

In the past, it has been too narrowly thought that the career development process occurs only within several discrete events, sometimes isolated from other aspects of schooling. We felt that better explanations of the career development process were needed so that we could better understand which events and student experiences, and in what relationship, contribute to the students' academic and career future.

THE EDUCATIONAL BENEFITS OF MAGNET SCHOOLS

Numerous studies already point to the benefits of magnet schools. In general, magnet schools have been found to increase student achievement, student motivation and satisfaction with school, teacher motivation and morale, and parent satisfaction with the school (Blank, 1989; Crain et al., 1992; Gamoran, 1996; Heebner, 1995; Metz, 1986; Musumecci & Szczypkowski, 1991). Almost all the studies reviewed by Blank (1989) show that average test scores of students in magnet schools are higher than scores for non-magnet schools.

But the label of "magnet school" is applied to schools which can be considerably different in purpose, curriculum, pedagogy, and standards; for example, in some school districts, highly selective academic high schools, schools with programs for students with particular talents, reduced size elementary and middle schools with a particular focus, and alternative schools for students with academic and behavior problems may all be called magnet schools. These schools may differ in entrance requirements and selection criteria; even more, they may attract students (and their parents) interested and motivated enough to take advantage of an opportunity to attend a magnet school, often at a great geographical distance. Several studies, which were designed to overcome the selection bias usually

raised about the research results on magnet schools, offer evidence of their success. In a longitudinal study of over 1,000 students in four school districts, Musumecci and Szczypkowski (1991) found that those who spent a longer period of time in magnet schools had a better promotion rate and enrolled in more college prep courses than those who spent only a relatively brief period of time. In general, on all measures of academic success, behavior, attendance, and participation in school activities, the long-term magnet school students outperformed their short-term (or non-magnet) counterparts.

Crain et al. (1992) studied the career magnet schools of a large city, focusing on the lottery system—the lottery winners (one-third of the students in the city) who attended the career magnet, who might not otherwise without the lottery; and the lottery losers, who attended the comprehensive high schools, likely in their own neighborhoods. They found that the magnet school students were less likely to drop out during the transition to high school, made greater gains in reading, and earned more credits toward graduation than their comprehensive high school counterparts. The academically weakest students—those with the lowest test scores—did not succeed, however. In a related study of the lottery winners and lottery losers, Crain and Thaler (1997) found that comprehensive high schools proportionally are graduating four students for every three graduated from a career magnet high school. The authors suggest, paradoxically, that this may be due to the high standards in the traditional academic subjects in the career magnet high schools, which have insufficient resources for remedial services.

In other studies, Gamoran (1996), in estimating the educational effects of magnet schools, comprehensive high schools, and Catholic schools, found that for the average student, magnet schools appear to produce higher achievement in reading and social studies. Finally, a national study of magnet schools by Blank, Dentler, Baltzell, and Chabotar (1983) showed that 80% of the magnet schools had average reading and math achievement scores above their district's average. These were studies of many different kinds of magnet schools, however, not just academic career magnets with random selection procedures. Some highly selective or desirable schools which students and their parents actively chose may have been included in the sample.

For many, then, magnet schools are thought to have the potential to affect measurable educational outcomes positively, such as student grades and scores on standardized tests, but there are other academic benefits as well: students in magnet schools

have better attendance records, earn more credits toward graduation, and think in more sophisticated ways about their career futures than their counterparts in comprehensive high schools (Blank, 1989; Crain et al., 1992; Heebner, 1995).

The shortcomings of many urban comprehensive high schools signal why many educators hope magnet schools will be more successful in educating urban youth. Comprehensive high schools typically lack specific programs of study and offer little academic counseling, leading to students' lack of engagement with schoolwork. What then follows is weak performance and discipline problems, resulting in a poor and sometimes an unsafe climate for learning (Gamoran, 1996). The traditional curriculum of the comprehensive high school often seems irrelevant to many students, and many of their teachers agree that the curriculum is excessively academic (Crain et al., 1992). Many comprehensive high school students do not understand the connection between school and the rest of their lives and do not see school as contributing to their future well-being by improving their occupational chances (Alpert & Dunham, 1986; Hendrix, Sederberg, & Miller, 1990; Valverde, 1987).

It is thought that by meeting students' career as well as academic needs, a career magnet school can make education meaningful and motivate students to learn more in their academic classes because they are spending a part of their day learning material relevant to a possible future (Crain et al., 1992). One should not assume, however, that high expectations for academic work are not the norm in a school with a career-oriented curriculum (Crain & Thaler, 1997). Students in career magnets see academic as well as career-related course material as more relevant and therefore tend to take more classes, work harder, and learn more (Gamoran, 1996). The culture of the school supports this behavior. With the importance of higher education in the United States, it would be difficult to recruit students to a career school at the beginning of high school if attending meant jeopardizing the option of attending college later (Heebner, 1995).

In addition to increasing student motivation, magnet schools can encourage students to stay in school. Heebner (1995) found there was a lower dropout rate among lottery winners in medium and high reading-test-score groups in public magnet schools in a large city, but, importantly, not in the lowest. Similarly, studies in New York City and Rochester, New York, comparing magnet high school attendance with district averages generally found higher attendance at magnets (New York City Public Schools, 1988;

Rochester City School District, 1988). In their analysis of a magnet school system in a large city, Crain et al. (1992) explain why this may be the case; for example, career magnet school programs that provide more hands-on computer work encourage student attendance among these students with average reading scores, and programs with strong placement efforts encourage students with poor reading scores to stay in school, although not always successfully.

The social and economic problems of families add an additional educational burden to the problems of educating urban youth. Students who come from poor families face a host of academic and career challenges. Living in poverty is associated with low academic achievement, increased risk of dropping out of school, and decreased chance of pursuing postsecondary education (Entwisle, 1990; Stedman, Salganik, & Celebuski, 1988; Velez, 1989). These conditions seriously constrain the job entrant's options in the labor market (Mortimer, Dennehy, & Lee, 1992). What is more, although economically at-risk students have educational and occupational aspirations similar to those of students from higher socioeconomic backgrounds, at-risk students, particularly in traditional, comprehensive high schools, are less well-prepared to pursue their educational and occupational objectives (Mortimer et al., 1992).

This is so for a number of reasons: at-risk students have feelings of less self-efficacy than other youth. Poor students also feel that they would be less likely to have a job they enjoy, or that pays well, and less likely to own a home. They also report less intrinsic motivation to do school work (Mortimer et al., 1992). Students living in impoverished circumstances may also not receive the same level of parental support as more advantaged youth. The social support network and economic resources of minority and low socioeconomic status students are too often not conducive to building and sustaining college aspirations (Hotchkiss & Borow, 1996).

A large share of the estimated twenty million young Americans who do not include college attendance in their plans are from the disadvantaged sector of the youth population; although, in recent years, sufficient educational credentials are a pivotal factor for job seekers finding full-time work. For young adults without a college degree, job opportunities are shrinking, real earnings are declining, and prospects for unemployment are greater (Hotchkiss & Borow, 1996). And given parents' economic difficulties, high-risk students may not find educational and vocational guidance in their home (Mortimer

et al., 1992). These are the students that are largely enrolled in comprehensive urban high schools, with few educational options except a magnet school, since private schooling is not economically feasible.

This study was designed to determine the effects of attending such a career magnet high school on these students who otherwise would have attended a comprehensive high school. Particularly, it examined the differential impact of the curriculum and instruction in the school, students' extracurricular experience, work experience while in school after graduation, peer relationships while in school, and family attitudes toward schooling on the postsecondary education and career development of the graduates of the career magnet and comprehensive high schools.

A COMPARATIVE STUDY OF THE EFFECTS OF CAREER MAGNET AND COMPREHENSIVE URBAN HIGH SCHOOLS

Since the 1970s, the Board of Education in the large urban school district under study has created a number of career magnet high schools to provide integrated academic and vocational education as a strategy to attract a racially, economically, and socially diverse group of students. They are considered "educational options schools" that provide a dual curriculum of academic and vocational coursework to prepare students for work, without foreclosing their opportunities to attend college, and for a career for which they have received initial preparation. These schools operate both as "schools-within-a-school" in zoned comprehensive high schools (currently 95) and as stand-alone career magnet high schools (currently nine). (These numbers frequently change because of the program's evolution.)

Unlike many other magnet schools, these career magnets (sometimes called "academic career magnets") do not have a totally selective admissions policy. Since the 1980s, all eighth-grade students in the city schools apply to any high school they might choose to attend in any neighborhood in the city, including the career magnets. This especially allows minority parents to exercise choice in their children's education, usually only an option of middle-class white families. Students are assigned to the magnet schools according to reading scores, although one-sixth reading above grade level and one-sixth

reading below must be admitted. Additionally, in 1987, the Board of Education mandated that one half of all students must be admitted to a career magnet high school by lottery. Thus, students with a full range of reading test performance are usually admitted through a selection process, but with one-half of any entering class assigned randomly through the lottery. The lottery then has ensured that the student body of the career magnet schools is representative of the high school student population in the city.

Previous studies of the institutional effects of career magnets and comprehensive high schools, made possible by the uniqueness of a database of school records of students randomly assigned to the different high schools, have examined outcomes like grades, attendance, transfer, and dropout rates, and address only a limited number of questions such as school and post-graduation experiences (Crain et al., 1992; Crain & Thaler, 1997).

Sample

Subjects

The subjects of the study were 110 graduates of four career magnet high schools and four comprehensive high schools. A total of 51 students who attended and graduated from a career magnet school—the "lottery winners"—and 59 who attended and graduated from a comprehensive high school—the "lottery losers"—were included in the study. Because the subjects were drawn from a database for the study constructed in an experimental design format, the graduates were selected in pairs in which one graduate was randomly admitted to a career magnet school while the other was randomly rejected from the same school, and subsequently, attended and graduated from a comprehensive high school. In our study, then, the random selection process assured group equality and eliminated the initial differences between the groups known as selection bias. Since the pairs of graduates were constructed by random assignment and matching, any consistent difference between career magnet and comprehensive high schools can be attributed to the schools they attended. These differences between the groups we considered institutional effects.

The subjects were chosen by a careful matching plan. They had to have been graduated from high school within the previous two years, have scored in the mid-range on standardized citywide reading tests, and have been enrolled in high school in regular

classes, with no special education placement. The potential interviewees were also matched on age and first choice of high school; however, it was not possible to match the pairs by the junior high school they attended. Nor was it possible to match them perfectly by gender because two of the four magnet schools from which the lottery winners were identified were heavily female and needed to be matched with females attending the comprehensive high schools. This meant that males from the other two career magnet high schools were overrepresented in the study. Race and ethnicity were balanced in the selection of interviewees. Out of the 110 students, 72 were female graduates and 38 were male graduates. Their ages ranged from 19- to 22-years-old.

Table 1

Demographics	Frequencies	Percent
Sex		
Males	38	34.5
Females	72	65.5
Age		
19 years	36	32.7
20 years	61	55.5
21 years	9	8.2
22 years	3	2.7
School Type		
Career Magnet	51	46.4
Comprehensive	59	53.6

The participants were located through lists obtained from the Board of Education. Permission from the Board of Education was received to interview the students. The graduates were contacted through letter from their high school counselors and asked if they were willing to participate and be interviewed. Those who agreed were paid $40. The interviewers were graduate students specially trained for the study, matched with the interviewees in race or ethnicity, age, and gender in almost all cases. The interviews ranged from two to three hours long.

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Interview Schedule

All 110 graduates were surveyed using closed-ended (Likert scale and yes\no) structured interviews; a subset of the graduates (n=21) were also interviewed in greater depth using a semistructured interview protocol that allowed for follow-up and probe questions, which are being separately analyzed as case studies. The report of the study in the body of this report is based only on the responses of the high school graduates to the structured survey. The interview schedule contained 440 questions with a large number of skips.

The graduates were questioned about their educational, occupational, social, and family experiences from eighth grade through high school, their experiences on-the-job while in high school and after graduating, their experiences at college or a postsecondary education institution, and their experiences at home and in the community. The questions elicited information about the students' experiences in the following categories:

- *General School Experiences*: for example, high school choice, interests, self-concept, planning, social and emotional support, academic experience, occupational class experience, work experience related to either academic or occupational classes (supervised and nonsupervised), non-school-related work experience (supervised and nonsupervised), and volunteer and community service
- *Overall Evaluation of High School*
- *Career Choice and Development*: for example, timing and exposure to social influences through field trips, mentoring, and shadowing, and current occupational interests
- *Work experience*: for example, work history (currently employed, unemployed, or seeking work) and current experience
- *Educational Outcomes*: for example, questions about plans for college or postsecondary education
- *Personal Experiences*
- *Family Life and Relationships*

- *Background Characteristics*
- *Racial Identity and Attitudes*

Questions about career identity and career self-efficacy were distributed through these sections. The students also responded to separate inventories to determine the degree of their internal or external locus of control and their responses to stressful life events.

THE IMPACT OF CAREER MAGNETS ON THE CAREER DEVELOPMENT PROCESS

The Characteristics of the Schools

As part of the study, the research staff visited all the schools attended by the graduates and interviewed the academic and vocational teachers and counselors currently working in the schools. The staffs also collected all administrative and program information about the schools available from the district and the school itself.

Administratively, and even programmatically, the career magnet and the comprehensive high schools attended by the graduates shared a number of characteristics, except, significantly, the career magnets required that students satisfy an array of both academic and vocational requirements to graduate. Both the career magnet and the comprehensive high schools in the study were large urban schools with a mix of new and veteran faculty, although teaching in a magnet school was considered a desirable assignment, and faculty often asked for a placement or transfer to one of the schools. During the time the graduates were attending the high schools, the faculty and administration were free to adopt innovative curriculum; for example, although students were required to take a subject like English for a determined number of years in all the high schools, the content of the course could vary. However, at the time of the research, a new school superintendent had imposed stricter academic requirements and mandated particular academic coursework on all the high schools, in response to the demand for national standards and the new policy of the city colleges that graduates of the city high schools would have to meet higher traditional academic standards and demonstrate mastery of

particular academic coursework in order to matriculate to any of the four-year colleges in the system.

In neither type of school during the time the graduates were in high school was there formalized integration of academic and vocational coursework nor any integration between students' classwork and their work experiences. The idea of integrated curriculum and integrated work experience was a new school reform at the time, even in career magnet schools. Such reforms likely existed only as partially articulated and unorganized program efforts in schools like the career magnets. This might be due to the perceived status differences in the professional preparation and experiences of academic and vocational teachers: traditionally, vocational teachers have a lower status in the comprehensive high school, which is often perceived as an academic school in the school system. In the career magnets in the study, however, the vocational teachers had a particular status as instruments for carrying out the school's career focus, and emblems of its identity. The academic teachers generally were under pressure to prepare students for statewide tests in the traditional academic subjects, which even in schools with strong career focuses could not be ignored. In the career magnet, it was a matter of thorough academic *and* vocational education, not integrated academic-vocational education.

All students in the study had to meet common requirements for graduation and a state diploma. Students in the career magnet high schools, however, were required to take a full complement of coursework in their career major in their junior and senior years as well as all the academic courses required to graduate or receive a Regents diploma. But even before, certainly by their sophomore year, they also had to have taken a course in an introduction to careers. The career magnet students were encouraged to declare a career area early, and given very little latitude to switch after making the decision precisely because they would be accumulating course credit in a technical career area which could not be transferred to another area if they switched; they would endanger their chance to graduate if they switched their career concentration.

Not all of the career areas were of equal prestige or difficulty in the career magnet high schools. A school might have a reputation for a particular career area, often expressed in its name; for example, business and finance, health careers, aviation, and so forth. Within each, however, there could be many career strands, requiring different levels of aptitude and academic ability. In one school with a health sciences focus, for example,

there was coursework of increasing difficulty for future dental technicians, laboratory technicians, and doctors. Most of the career magnets offered coursework in a number of career-related subjects, here, too, for students of different interests and ability—technology and law for some, but communication and cooperative education (work/study) for others like potential dropouts. (Because it was not possible to include students from a representative mix of majors with curricular difficulty, we could not compare the differential impact of the choice of a particular career track on the students' educational and career development.)

The comprehensive high schools, although often considered the academic high schools in the city, also offered a variety of programs, including vocational education coursework (a student could receive vocational education in a designated vocational education high school, in a career magnet, or in a comprehensive high school); general education, usually applied academics; and a traditional academic education, including advanced and honors coursework. Also, students could pursue their special interests, including career interests, through clubs and extracurricular activities. The students in the comprehensive high schools like those in career magnet high schools were given opportunities to follow their career interests, although less intensely, comprehensively, and consistently.

The schools had a lattice-work organization, which identified and placed the student by grade level, house, and track (academic, vocational, or general in the comprehensive high school) or career focus (career magnet high school). This organization determined which adults a student would encounter during his or her high school years. In practice, however, the house plan was only an artifact for organizing these very large high schools into smaller administrative units, and appeared to have no formal or informal educational purpose or to substantially increase opportunities for students to interact with faculty or others in the school. The abundance of extracurricular activities in the schools, however, created other structures in which students could develop their educational, career, recreational, and personal interests. These after-school clubs (many organized for students with particular career interests in both the comprehensive and the career magnet high schools) and the schools' intramural sports and athletic teams provided venues for free informal contacts between students and faculty or coaches without the programmatic, time, and space constraints of the formal instructional programs.

Students in both kinds of high schools were assigned to a counselor, often identified with a particular house, and the career magnet graduates encountered them more often. The counselors were responsible for dealing with the logistical, discipline and attendance, and family and other non-school problems affecting the students' educational lives while in high school. They did not, however, consider themselves career counselors, although they might arrange vocational testing. In some schools, there might be a faculty member assigned to an office that coordinated student employment through the school. In the career magnet high schools, career counseling was vaguely left to the house masters or most likely to the head of a particular career strand or to individual occupational teachers. Each of the schools had a college counselor.

In neither the career magnet nor the comprehensive high schools in our study were students guaranteed a school-related work experience. The availability of jobs for adolescents, the vicissitudes of job placement, and a conviction among some that work may interfere with academic studies made it difficult for many students to have an educational work experience while in high school. At the time the graduates attended their respective high schools, even in the career magnet high schools, there was no organized program to place students in a job, yet alone one in their career area, although many students did work in a part-time career-related job or served an internship. Informally, the staff attempted to place the students in jobs, but the students found many of their own jobs. Internships, within the school, were a requirement in many of the career focus programs, however.

In general, the career magnet high schools were perceived as being safer and freer of the violence identified with a number of the city high schools, although this may not necessarily have been true. Clearly, though, many of the students in the career magnet high school believed they were attending a safer school; a guidance counselor could always threaten a failing student or one with a poor school or class attendance record with a transfer back to his or her neighborhood school, and expect a reaction. Finally, despite their career focus, the career magnet high schools were perceived to have high academic standards and to send their graduates on to postsecondary and higher education, as well as jobs. Many people even referred to them as academic magnet schools.

THE OUTCOMES OF THE CAREER MAGNET AND COMPREHENSIVE HIGH SCHOOL ON CAREER DEVELOPMENT

As urban high school students from similar backgrounds, both "lottery winners" and "lottery losers" could perceive their high school experiences in much the same way; however, the graduates of the career magnet and the comprehensive high schools in our study differed in their high school educational and work experiences, career choice and development, post-high school work and educational experiences, and peer and family relationships, which point to the influence of the career magnet experience. But first, even these specific differences must be thought of more broadly. In most of their responses to the close-ended interview questions, the graduates of the career magnet high schools were more articulate than the graduates of the comprehensive high schools: they gave more answers to questions when given a chance to make a second or third choice on a scale ($p. < .01$), and their responses were more specific and they elaborated more on open-ended questions. The comprehensive high school graduates, in turn, gave fewer and also more socially and psychologically expectable and desirable answers. This suggests that the career magnet graduates had thought more about their experiences and were more aware of themselves and more analytic than their comprehensive high school peers, and probably more realistic and confident enough to give a personal answer to the questions during the interview. In thinking retrospectively about their high school (and post-high school) educational and work experiences, the career magnet graduates displayed a greater understanding of the factors impacting their growth and development. In attributing their successes and failures, they indicated a greater feeling of self-efficacy and a greater willingness to trust their own abilities and skills.

High School Educational and Work Experience

The Role of Curriculum and Instruction

Although the career magnet and comprehensive high schools in the study were similar in curriculum, teaching practices, school organization, opportunities for school-related employment, availability of counseling, and extracurricular activities, the career magnet graduates in the study retained stronger positive feelings toward their high schools than the graduates of the comprehensive high schools. The career magnet graduates were also twice as likely than the comprehensive graduates to indicate that they would choose the

same high school again because of its career focus and reputation as a safe school. They were also more than four times as likely to rate their schools' reputations as "good to excellent" than their comprehensive counterparts. The comprehensive graduates did not indicate that they would want to return to their high schools because of the value of the education it offered; they would return because of the appeal of the location, its safety, or the fun they had. What is more, the career magnet graduates felt that their high schools maintained a good reputation in the community, unlike the comprehensive graduates who felt that the reputation of their high school was only fair (p. <.002). This may be a consequence of selectivity, however, because the career magnets actively chose the school they attended. From this study, however, we do not know the perceptions of the students who either dropped out or transferred from the career magnet school to another school, possibly a comprehensive high school. We can assume, however, that those who stayed to graduate shared the common values and perceived common opportunities that characterize these schools.

For the most part, the graduates did not differ in their overall perception of the impact of their coursework on their career development. The career magnet graduates were also more likely to attribute any positive educational (academic and career) outcomes of their high school experience to their occupational classes, which seemed more useful and coherent than their academic classes, although among their academic classes they felt most confident in their English classes. As expected, the career magnet graduates took more career-related courses than their counterparts: they averaged 13.4 hours/credits of career-related coursework during high school as compared with the comprehensive graduates who averaged 5.2 hours/credits. Given the school's theme, it is not surprising that the career magnet graduates would assign the greatest real and symbolic value to their occupational courses. For the comprehensive graduates, including those also enrolled in vocational classes, however, it was not clear whether academic or occupationally related coursework (for those who took such courses) was the more valued.

In their academic behavior, the comprehensive graduates also cut classes more frequently (once a week) than their career magnet peers (a few times a semester). Concerns about passing courses and graduating inhibited both groups from cutting class, but the career magnets felt a greater peer pressure not to cut class and were concerned that they would upset their parents if they did (p. <.05). And, for the most part, the career magnet graduates never cut their occupational classes.

The Role of Teachers and Counselors

We found that the career magnet students did not report a significant number of contacts with their teachers while in high school. They identified only the teachers in their occupationally related classes as influential in their career choice or development (but not as strongly as predicted). This is not surprising: The occupational teacher has a longer and more sustained relationship with the student and is associated with a coherent sequence of instruction which is practical and highly utilitarian. The occupational teacher, someone who has had a career in the area in which he or she is teaching, can be perceived as a master who legitimately can transmit knowledge and competencies to the learning novice, where the academic teachers cannot. The student and the occupational teacher also occupy a common space in the shop, laboratory, studio, or restructured classroom, conducive to more informal and unrestricted interactions. And often student and teacher are jointly performing a task. These are the ideal conditions for the students to learn a task; to internalize the norms, values, and language identified with work and a particular career; to orient themselves to career exploration and planning; and to develop their self-concept as a worker.

Within the school, neither the career magnet nor the comprehensive graduates were likely to talk to a counselor nor necessarily attribute any specific influence to the encounter. The comprehensive graduates, however, were more likely to report having spent time talking to a counselor about a career or future work than the career magnets, and generally to get to know an adult while in high school. The career magnet students did not connect their counselors, or the heads of their houses or the chairs of the department of their career focus, with their career development. As in almost all urban high schools, counselors in career magnet high schools rarely function as career counselors, even informally to any significant degree, it would appear. Not even those teachers administratively designated to foster the school's career focus had a direct impact on the students, except indirectly through their influence in the school's curriculum or extracurricular activities.

The Role of Extracurricular Activities, Community Service, and Older Adults

Both the career magnet and the comprehensive graduates engaged in volunteer and community service, although the comprehensives had more experience. The career magnet graduates reported that they became less absorbed with themselves as a result of the

experience; the comprehensive graduates thought that they now had more information as a result of the experience. More of the career magnet graduates than their comprehensive peers, however, thought that participating in extracurricular activities affected their thinking (p. <.02). In neither case, however, did the graduates attribute a great deal of specific importance in their career choice or development to the extracurricular or volunteer experience or to any single person they encountered in the community.

This was an unexpected finding. Mentors associated with school-related or community experiences, coaches, and teachers identified with extracurricular activities are often sources of influence on the development of adolescents' vocational maturity. Like the occupational teacher in the career magnet school, they are in a position to directly influence the youth's career development. They are perceived as experts in an area of the students' interest. They also relate in less formal, quasi-social circumstances conducive to open-ended unrestricted interactions. Again, the youth and the adult are often doing something together, under ideal conditions for the students to use them to assist in their career development. But in this study, their influence was not distinctive. The career magnet graduates did not single out any of these adults as having been more influential than they were to the comprehensive high school graduates. This suggests that despite popular belief in the myth of the influence of a single powerful adult, youth develop a career orientation globally through many sources in their high school experience, without needing to identify any one specific experience or person as the sole source.

At-Risk Academic Behaviors

We found that the career magnet graduates were significantly less likely to engage in behaviors associated with poor academic performance. The career magnet graduates were less likely to have been in a fight, to smoke, to use drugs, to drink alcohol, to be pregnant or make someone pregnant, or to be arrested by police on serious charges. Overall, 41% of the magnet school graduates reported these no-risk behaviors as compared with only 19% of the comprehensive graduates. The reduced incidence of academic risk behaviors was the biggest difference in the two groups while in high school. We can assume that the strong academic and vocational curriculum, the belief in the importance of work, and the acceptance of the legitimacy of the social requirements of the workplace characteristic of the career magnet high school experience motivated the students to avoid or reduce any at-risk behaviors.

School-Related Work Experience

Given that occupational values form in adolescence, high school students are particularly responsive to work experiences that provide learning opportunities (Mortimer et al., 1992). Because they try to provide high-quality work experiences, many believe that career magnet schools can be particularly successful in fostering adolescent career development experiences which can have a positive effect on adolescent career development (Stern, Stone, Hopkins, & McMillion, 1990; Wijting, Arnold, & Conrad, 1977).

Many of the career magnet and comprehensive students worked while in high school in jobs related to their coursework, but the comprehensive graduates were more likely to hold a job while in high school ($p. <.01$). In general, however, more career magnet graduates than comprehensive graduates reported that they did class assignments and changed a class project because of their job experience. What is more, understandably, they felt freer talking about their job experience in their occupational classes than in their academic classes. On the job, the career magnet graduates were more likely to work alone ($p. <.01$) but to become more acquainted with and relate to adults better than their comprehensive peers. The career magnet graduates found the job experience valuable for career awareness, knowledge of work norms, and the development of cognitive skills necessary for performance on-the-job and interpersonal abilities. They felt that their work experience was important and could be connected to future work ($p. <.05$). In general, in talking about their job skills and job experience, future career plans, and the relationship between job experience during high school and in later careers, as noted previously, the career magnet graduates were more articulate and gave second and third answers to questions while the comprehensive graduates gave only one.

The comprehensive graduates felt that the work experience only helped them develop specific technical occupational skills, not necessarily knowledge of future careers or work norms. Unlike their career magnet counterparts, they did not connect their high school employment with their future work, nor did it help them develop a concept of themselves as a worker or help them understand the demands of the workplace. For them, their current work was a job, not a step toward a career.

The career magnet graduates may have benefited more from their work experience in high school than the comprehensive high school graduates largely because they had an avenue to use it in their occupational classes, although they may actually have had less

experience. They had more opportunities to talk about their job skills and job experience, future career plans, and the relationship between job experience during high school and later careers. But they also may have used their work experience with the specific purpose of enhancing their career development. They not only became more skilled in a task so that they could increase their performance on the job, but, more maturely, they learned work norms and acquired interpersonal abilities. Consequently, they came to be more aware of the demand of a career and could relate their work experience to future work. This explains why the career magnet graduates were more articulate about their work experience during the interview and gave more and fuller answers to the questions than the comprehensive graduates. We can assume that attending a high school with a career focus helped the career magnet graduates turn their adolescent work into a career development experience.

Peer and Parent Influences

Peer Influence

The graduates of the career magnet schools reported that most of their friends were fellow students in their classes, who did not live in their neighborhoods ($p. < .01$). More of their social life then was centered in the school, and with school friends rather than with friends in their neighborhood. For many of the graduates, leaving the neighborhood (and the possibility of attending the neighborhood zoned high school) to attend the career magnet high school in another part of the city, a necessity for most of the students, meant that they changed their peer group. By contrast, the graduates of the comprehensive high schools had friends in their schools and in their neighborhoods both, and they identified their social life with their neighborhood.

Peer groups are a highly adaptive context in which to negotiate the uncertainty of adolescence. Securing one's place in a clique prevents a student from having to confront a much larger, constantly shifting array of peers in high school, many of whom are strangers. This is especially true of students in magnet schools. Here students are often brought together from several different geographic areas, and the probability of not knowing someone is higher in magnet schools than in neighborhood comprehensive schools.

The friends of the career magnet graduates had more plans for the future, including college, but especially for future careers, than the friends of the comprehensive graduates (p. <.03). In our study, many of these peers shared an academic and career orientation, marked at this stage of development as academic and career plans for the future. The career magnet graduates reported that it was pressure from their peers that influenced them not to cut classes. Within their peer group, the students understood that their high school, in addition to its career focus, was academically demanding, more so than the comprehensive high schools in their neighborhoods (Crain & Thaler, 1997).

Having friends serve as academic and social resources can have a direct and positive influence on achievement outcomes at school (Wentzel, 1991). Several studies have shown that peers in high school can positively influence academic achievement, career plans, future goals, and vocational identity (Alexander & Eckland, 1975; Clasen & Brown, 1987; Delgado-Gaitan, 1986; Johnson, 1987). In general, pressure to finish high school was the single strongest influence from friends that responded to Brown's (1982) survey of adolescent peer pressure. Delgado-Gaitan (1986) demonstrates that peers influence each other to perform to their highest ability. Studies of the interaction between adolescents and their respective peer group indicate that the peer group is also capable of influencing the student to return to school as well.

Perhaps positive peer influence is one explanation for the higher attendance rates found at career magnet high schools. Heebner (1995) suggests that students who stayed in magnet schools, rather than dropping out, benefited from the new and varied group of students brought together because they had a chance to continually interact with heterogeneous, career-oriented peers who were more likely to complete high school. Those who stayed in the neighborhood comprehensive schools interacted with many of the same students with whom they attended middle or junior high school.

It is important to note that peer influence is also an important determinant of nonconforming behavior. It contributes substantially to the power of a model presented by Alpert and Dunham (1986) for keeping academically marginal youths in school. These researchers recommend that insulating children from the negative influences of peers should be built into policies aimed at preventing school dropouts. Career magnet high schools offer that possibility: They can insulate students from gang members, drug dealers,

and other violent offenders in their neighborhood schools because of their geographically, racially, ethnically, and academically diverse student populations.

Peer influences differ in many urban schools, but in these career magnet high schools, with a more heterogeneous social class mix possible than in the neighborhood comprehensive high schools, students could more easily cross any social class and cultural boundaries inhibiting their academic aspirations or behavior and academic motivation.

Parent Support

The graduates of the career magnet and comprehensive high schools experienced their parents' interest in their educational future very differently. More than the comprehensive graduates, the career magnet graduates believed that their parents thought their going to college was the most important part of their plans for the future (p. <.01). The comprehensive graduates reported that while their parents thought going to college was a good idea, their family had few financial resources to send them to college, and they did not expect to be supported if they chose to attend (p. <.01). The career magnet graduates felt that their parents believed that it is important for the family to make sacrifices to send them to college, particularly, that their parents would pay their expenses and support them if they attended a state or city college (not a private college), pay their tuition and books while they lived at home, and occasionally give them money. Of all the students' feelings about their high school experiences, and its possible contribution to their career development, parent support was most powerfully associated with the students' career magnet experience.

Family members are also among the most important forces in preparing youth for their future roles as workers. Sociologists, psychologists, and child development researchers all agree that the family exercises a powerful socializing force on the youth work experience (Hotchkiss & Borow, 1996). Among the family influence factors that affect career decisionmaking and career development, family socioeconomic status and parent education are particularly significant. The socioeconomic status of the family helps to shape values, educational expectations, and career aspirations, all of which are important to career development. Individuals from better educated, higher income families expect to attain significantly more education and aspire to higher status occupations.

The variable found to have a particularly strong effect on educational plans and occupational aspirations is parental education level. Lower levels of parent education can hinder adolescent career development. Mortimer et al. (1992) found that low socioeconomic status parents are less likely to have completed high school than higher socioeconomic status parents and are less likely to have gone to college. Students who come from families with limited education, then, are less likely to go to college or achieve a professional occupational goal (DeRidder, 1990). In general, the disadvantaged students who attend career magnet high schools tend to view college as something out of their grasp, both financially and educationally. They do not have the funds to begin school right away and, since money is of paramount importance, they opt for a paying job out of high school rather than a college education. Low-income students also often have genuine and justifiable fears about unemployment and economic failure. In this situation, as Heebner, Crain, Kiefer, and Si (1992) speculate, a student may avoid thinking about the future because obtaining professional training is economically and perhaps even cognitively out of reach. Many inner-city students do not have the luxury of deferring paid work in favor of advanced schooling and internships and plan to stop formal schooling after they receive their high school diplomas to get a paying job. What may have helped the career magnet graduates in our study overcome their fears about their economic future and to become more motivated to go to college and to be confident about the economic returns of the investment was the perception of the potential support of their parents.

Post-High School Experience

Thoughts about the future—college, the world of work, the benefits of a career, and personal independence—occupied the minds of the career magnet graduates during high school, in general, but less so in the minds of the comprehensive graduates. No clear sense of the comprehensive graduates' plans for the future emerged from their answers to the survey questions. More of the career magnet graduates planned to go to college than the comprehensive graduates, who postponed such thoughts. Of those graduates who attended college after graduating from high school, the career magnet graduates took more college credits ($p. < .009$). They also said that they had already declared a major, unlike the comprehensive graduates. The career magnet graduates left high school believing that they were good at something which could help them in the future, and found that taking tests and other inventories was useful in learning about their skills and abilities.

Most of the graduates quit their high school jobs right after graduating, but the comprehensive graduates did so at a greater rate (p. <.04). There was, however, no significant difference in the number of months the career magnet graduates and the comprehensive graduates worked in the first, second, or third jobs after graduation. Of those working in their third job after graduation, however, the career magnet students were more likely working full-time, and the comprehensive graduates part-time. What is more, after graduation, career magnet graduates indicated a starting wage that was one dollar higher per hour ($7.27) than the comprehensive graduates ($6.28). Their current wages varied in the same way: $8.00 for the career magnet graduates as compared with $7.01 for the comprehensive graduates.

To a degree, economic factors affected the thinking of the two sets of graduates. The comprehensive graduates tended to feel a need for security in any job they held. The career magnet graduates appeared more ambitious; they were more willing to forego security in a job if it led to higher-level work later which paid more money. Currently, more career magnet graduates wanted to follow professional careers than the comprehensive graduates, who were also interested in technical and management careers.

A question remains, however. Most of the graduates of both the career magnet and comprehensive high schools were not enrolled full-time in college, and even the career magnet graduates, who had accumulated more credits and declared a major were still part-time students, and working full-time in work not necessarily related to their current education or future careers. For the career magnet graduates, it meant that despite their increased educational aspirations and targeted vocational training, they were still having economic problems reaping the benefits of their ambitions.

MODELS OF THE INFLUENCE OF INSTITUTIONAL EFFECTS AND PARENT SUPPORT ON CAREER MAGNET GRADUATES

In a related study of the effects of attending a career magnet high school, using the dataset created for this study, Zellman and Quigley (1997) developed two models of variables pointing to differences in the experiences of the career magnet and comprehensive high school graduates. For the first model, the researchers chose variables explaining

institutional effects (e.g., self-efficacy, career identity, institutional characteristics, student at-risk behaviors, and parental and family characteristics). To create the model, the researchers collapsed some of the variables and created scales from the others. For the second model, they chose variables in the literature predicting parental willingness to make sacrifices for their child's education (absence of risk behaviors, good academic performance in high school, specific occupational interests, and self-efficacy). They chose these variables because they would indicate the child's seriousness of purpose to warrant financial sacrifices.

To understand the interactions and individual impact of the variables, the researchers ran regression analyses on each model to predict career magnet or comprehensive high school graduation. The regressions were also run to identify variables significant at the p. <.05 level. Both of the models were tested for multi-collinear and influential data points affecting the fit of the regression model.

The analyses revealed that the influence of the career magnet student is transmitted through peer relationships and parent support. The career magnet students were more likely to have a best friend who has a career interest, and thus very likely to have been exposed to an environment where career thinking and career planning were the norms. Consequently, friendships in the new environment, away from the neighborhood, were more likely to form around mature interests than might be otherwise possible; in turn, students might have come to believe that they were developing and using marketable skills in their career-oriented classes and at work. In addition, the school with its emphasis on the rewards of current efforts in the future likely influenced the youth and his or her peer group to avoid at-risk behaviors.

The analyses also revealed that a student who graduated from a career magnet high school is 30% more likely than a comprehensive high school graduate to perceive that his or her parents would be willing to make sacrifices to send him or her to college. These same students were 19% more likely to believe that they would be in their desired careers within the next six to ten years. Importantly, these models suggest that of all the variables, attendance at the career magnet high school itself may have led to parents' assumptions about their child's seriousness of efforts because it required extra physical and academic effort to attend. Coupled with other variables in the models, like career confidence and

avoidance of at-risk behaviors, career-related college plans likely led to parental commitment to the student's education.

CONCLUSION: WHAT CAREER MAGNET HIGH SCHOOLS NEED TO DO

Magnet schooling began as a desegregation strategy, to provide opportunity through racial and social heterogeneity, and that still is its greatest value for youth. Magnet schools reduce the detrimental effects of social isolation because students who might not yet have future educational plans find friends who do. This makes it easier to avoid the academic risk behaviors that characterize the adolescence of many low-income urban students, behaviors we found more prevalent among the comprehensive high school graduates in the study. By bringing together more students preparing for college and by increasing their expectations of future educational and career opportunities, the youth shared an ethos of academic and vocational achievement in the schools. Higher achievement, we know, may result from the students' greater sense of membership, or social bonding, in magnet schools (Hill, Foster, & Gendler, 1990; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989). In turn, parents are then perceived as more willing to sacrifice to provide more opportunities for their children. More than comprehensive high schools, career magnet high schools can help students acquire the social capital we recognize as instrumental to career development.

Everything good about magnet schools is identified with the social climate it creates. Magnet high schools can provide adolescents with experiences, types of relationships, and involvements not usually encountered in other settings. They can transmit information, skills, and motivation and permit the adolescent to perform adequately in adult roles even while in high school. They can also provide a socially supportive and academically focused setting as they combine academic and career goals. Despite their promise, however, magnet schools have not yet found a way of making more adults available to students who can influence their career development. Only the frequent and consistent interactions with their occupation teachers has such an effect. Magnet schools need to provide more opportunities for youth to enlarge their social networks. This will not only reduce the students' social isolation, but will also provide resources to

complement, or supplement, the opportunities that their family and community background and education provide. This helps develop a sense of membership in magnet schools that increases students' commitment to and engagement with schoolwork, and is likely to promote achievement (Gamoran, 1996). Thus, students who might be overlooked and neglected in conventional classrooms may be more willing to participate in their education in a magnet school (Wehlage & Smith, 1992).

The climate of the magnet school for career development must be nurtured, however. The power of the magnet school rests with the articulation of its many parts. Currently, they are loosely coupled, despite their promise for proper integration. Clearly, the career magnet graduates still profited from their school experience, would return to their high school given a chance, and, in general, felt that they received a good education. But an opportunity to harness all the elements of the career development process for the students' benefit could be missed if the magnet schools do not aggressively link all of their elements.

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