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AUTHOR	Gerardi, Steven
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ABSTRACT

This report explores factors influencing the persistence and graduation of students at New York City Technical College. Part 1 presents an overview of an 8-semester study conducted of 307 freshmen from September 1989 through June 1994, while part 2 describes the research procedure utilized, indicating that the following types of data were collected: students' social background; educational background; scores on City University of New York (CUNY) standardized assessment examinations; measures of college performance, such as grade point average; and self-concept of ability. Part 3 examines the characteristics of the sample, indicating that in general they were of low socioeconomic status, had insufficient preparation in basic skills, and planned to earn an associate degree. Part 4 provides a descriptive analysis of factors found to contribute to graduation, citing significant positive correlations between graduation and parents' educational background, family income, completion of college preparatory classes in high school, assessment scores, high school mathematics averages, and high self-concept of ability. Part 5 discusses a regression analysis performed using parents' education, family income, educational background, reasons for entering college, degree aspirations, and self-concept of ability as independent variables, suggesting that a combined family income of $20,000 or more, father's college education, higher reading assessment examination scores, and a higher rating in the self-concept of ability scale were predictors of graduation. Tables and graphs are included. (TGI)

Factors Which Influence Community College Graduation

Dr. Steven Gerardi
New York City Technical College
300 Jay Street Brooklyn, N.Y. 11201

I. Overview and Context of this Report:

The last several decades within public education have been marked by the emergence of four crosscurrents: 1) from a political perspective - the equal assess movement which has resulted in a virtual explosion in ill-prepared college students; 2) from a socioeconomic perspective - the formation of a large chasm in the cultural capital between the classes (no city in America has as wide a gap between rich and poor as New York City. The 1990 census tracts reports that the median family income of $301,209 and $6,019 respectively is about two miles or six subway stops apart (ASA Footnotes, 1995 Vol.23,#9); 3) from an institutional structural perspective - the devaluation of vocational secondary education has the high school system as a mechanism for different educational experiences. Therefore, a principle means of academic stratification through differential exposure to curriculum and/or differential norms regarding academic performance; and 4) from a post-modern economy perspective - the rising floor of educational credentials needed for entry into desirable jobs within the labor market has led many high school graduates who normally would not seek a college education, do so now in ever increasing numbers within the CUNY system.

Therefore, for the City University of New York in general, and New York City Technical College (City Tech) in particular, these crosscurrents have effected student enrollment, college performance and career trajectories. The graduation data within this report suggests that the totality of the above mentioned crosscurrents

crystallizes as an underlying reoccurring theme of **cumulative disadvantages** for the students of City Tech.

Cumulative disadvantages should be viewed as the dynamic interplay and integration of past social and educational deficits reinforcing and creating new handicaps during the individual's higher educational career. Metaphorically, this process can be seen in terms of a domino theory, in that one disadvantage collides with another disadvantage, which activates yet another handicap and so on creating obstacles to graduation.

This report explores a number of factors which are all interconnected with the above mentioned crosscurrents and are associated with cumulative disadvantages. These factors flow from the theoretical concepts set forth in much of the sociological and educational literature. Therefore, such factors as the individual's social origins as indicated by parents education and the family's economic resources will be discussed. Since academic background is an important factor for college success, we will look at such areas as overall high school average, high school average in mathematics and in English and the number of college preparatory courses this sample has been exposed to in high school. Moreover, there is a long tradition within educational research which suggests that what a student wants out of college will effect performance, therefore degree aspirations and reasons for entering college will also be discussed. Lastly, the social-psychological literature suggests that self-concept and academic outcomes may be correlated. So we will be looking at the self-concept of ability of the City Tech

Student.

This discussion/report will address the following question: What influence do the above mentioned factors have on this cohorts' persistence and graduation from City Tech?

II. Types of Data/ Research Procedure:

Types of Data: This study employs five categories of data in analyzing the main concepts advanced here. The categories of data are: (1) SOCIAL BACKGROUND including gender, ethnic background, marital status, family income, residential status, mother's educational attainment, father's educational attainment, respondent's income, country of origin, college experience of siblings, reasons for attending college, funding sources for college, and the highest college degree aspirations of the respondents. (2) EDUCATIONAL BACKGROUND including the number of college preparatory courses taken in high school, high school average, high school average in math and English. (3) SCORES ON CUNY's STANDARDIZED ASSESSMENT EXAMINATIONS including a) the respondent's CUNY math score. The CUNY Mathematics Skills Assessment Test is a 40-item math and algebra test designed to identify students with math deficiencies. The test is locally constructed with no national norms. This exam measures basic mathematical skills in whole numbers, fractions, decimals, percents, ratio and proportion, signed numbers, equations, Pythagorean Theorem, word problems and all forms of algebraic representations; b) CUNY reading score. The CUNY Freshmen Skills Assessment Test in reading is a 45 item reading comprehension

subject of the Descriptive Tests of Language Skills (DTLS) (Educational Testing Service, 1978). The DTLS was specifically designed to identify students who may need special assistance in particular aspects of reading and language use before undertaking standard college level work and c) the CUNY writing score. The CUNY Writing Skills Assessment test is a choice of three out of five essay type test designed to identify students with deficiencies in writing. This examination was also locally constructed with no national norms. (4) MEASURES OF COLLEGE PERFORMANCE including the respondent's GPA after eight semesters, number of college credits earned over the eight semester period, enrollment or persistence status after eight semesters: (5) SELF-CONCEPT OF ABILITY as measured by the Brookover Self-concept of Ability Scale.

Over the last two decades the Brookover Self-concept of Ability Scale has been a reliable and valid instrument for assessing academic self-concept and has been cited in over 175 publications. The scale consists of eight Guttman scale items selected to differentiate students on perception of academic ability. The eight items are divided into two conceptual dimensions each composed of two logical subjects:(a) future- oriented (questions concerned with future educational goals and their ability to realize them) and present-oriented items (questions concerned with one's ability to do college work), and (b) comparative and absolute evaluations of self-concept of ability. Brookover, Thomas,and Paterson (1964) reported test-retest coefficients for their normalization sample of .95 for males and .96 for females. They also reported internal

reliability coefficients of .82 for males and .77 for females. Shavelson, Hubner, and Stanton (1976) reported predictive validity coefficients for the ASC and various subject area achievement tests ranging from .63 to .88 for males, and .52 to .68 for females. In meta analysis of the relationship between self and achievement performance measures, Hansford and Hattie (1982) found the ASC correlated best to academic performance measures (M=.43 in 18 studies analyzed) among a group of nine self-concept scales. Byrne and Shavelson (1987) found the ASC significantly and consistently correlated with various English self-concept scales, as well as grades in English and mathematics.

Data on educational background, CUNY assessment examinations and academic performance (categories 2, 3 and 4) have been extracted from the official records of City Tech. Information on social background and self-concept of ability (categories 1 and 5) were assessed from a questionnaire randomly administered to 307 freshmen the first day of classes. This sample represents approximately 10% of the entering Freshmen class of New York City Technical College (CUNY). This sample was followed through eight college semesters (from September of 1989 through June 1994) of study.

III. Characteristics of the Average City Tech Student:

The data suggest that nearly half of the students report that their mothers have not graduated from high school (see table 1). Likewise, less than half of the students report that their fathers'

have not graduate from high school (see table 2). Presumably, the lack of a formal education by the majority of the parents of this sample lessens their ability to assist their children during their school careers, and certainly reduces their ability to help their children during their college careers, increasing the odds that their children will have diminished college success.

The family's economic resources have both direct and indirect influences on school achievement. Several studies have noted the direct effects of the family's income as a dimension of economic and cultural capital. Under-privileged families simply do not have the discretionary funds for school-supported interventions such as tutoring, private schools, travel vacations, books, computers, educational materials or merely the leisure time spent in parent/child interaction.

These data suggest that 44% of the families in this sample earn less than $10,000 per annum (see table 3). It must be noted that the mean reported income for the 1970 CUNY cohort was $7,266. Between 1970 and 1989, commodity prices and salaries have quadrupled. These facts leave no doubt that the mean reported annual income of $10,000 defines this sample as seriously economically disadvantaged.

Most research suggests that high school placement within an academic college preparatory track has tangible and long lasting positive consequences for college achievement of the individual.

In the New York City public school system a complete college preparatory track is equivalent to 16 academic units. The data suggest that only 17% of the students had been exposed to an

academic track in high school (see table 4).

These data suggest that 49% of the students have only achieved a high school average of 70 or below in academic courses (see table 5). Table 6 indicates that 67% of the students have only achieved a high school average in mathematics of 70 or less.

Forty-three percent of the students have only achieved a high school average in English of 70 or lower (see table 7).

Finally, these data suggest that 67% of the students were not proficient in the CUNY Freshmen Skills examination in mathematics, 65% in writing and 67 % in Reading (see table 8).

Nationally, 32% to 40% of the full-time community college students wish to earn a Bachelor's degree. The data from the City Tech sample suggests that 36% wish to earn an Associates degree, 28% a Baccalaureate, 19% a Master's degree or higher and 17% were not sure (see table 9).

To sum up, these data describe the average City Tech student as: a) a college student who is of low socio-economic status; b) an individual whose parents have not earned a high school degree; c) a person who comes to college without sufficient preparation in the basic skills; d) a student who has had little or no exposure to the traditional academic curriculum at the high school level; e) an individual whose high school averages are the minimum required to graduate and e) an individual who plans to earn an Associates degree.

IV. Descriptive Analysis: Factors which Contribute to Graduation

The data suggest that after eight semesters of study 23 % have graduated, 17% remained enrolled and 61% did not return after their first semester of study. These graduation data are consistent with the national and City University of New York's norms.

Of the graduates, 46% were Associates degree aspirants, 17% were Baccalaureate degree aspirants, 11% were Master's degree aspirants, 6% were professional degree aspirants (Ph.D, M.D.,D.D. D.D.S., J.D. etc.) and 20% were not sure when they entered City Tech.

Fifty-one percent of the graduates received TAP and 43 % received PELL. Thirty-one percent suggested that their parents were paying for college tuition and only 18% indicated that they were paying for college with their personal savings.

Those who did not complete their program, 48% reported that their mothers had not completed high school, compared to 16% of the graduates. Similarly, 53% of those who did not return for their second semester reported that their fathers had not completed high school, compared to 15% of the graduates (see table 10) .

Another significant correlation with graduation these descriptive data may be suggesting is family income. These data suggest that of those who did not return to City Tech after their first semester of study, 62% reported their combined family income as under $20,000 per annum, compared to only 19% of the graduates. These findings may be suggesting the importance of such cultural capital factors as parents education and family income on the

individuals' college career and graduation (see table 10).

Educational background also seemed to be an important factor with associated with graduation from City Tech. These data suggest that 50% of the graduates have completed 10 or more college preparatory courses in high school, compared to only 25% of those who have not returned for their second semester.

Likewise, 55% of those who have graduated from City Tech passed the CUNY Reading Assessment Examination during their first attempt, compared to 41% of those who did not return for their second semester.

Forty-two percent of the graduates passed the CUNY Writing Assessment Examination during the first attempt, compared to 28% of those who did not return for their second semester.

Forty percent of the graduates passed the CUNY Mathematics Assessment Examination during their first attempt, compared to 29% of those who did not return.

Although overall high school average and high school average in English were not strongly correlated with graduation, high school average in Mathematics was an important factor. Of those who did not return to City Tech for their second semester, 51% had earned below a 74 average, compared to only 17% of the graduates.

Finally, these data may be suggesting that entering City Tech for a better job and self-concept of ability were correlated with graduation. Sixty-three percent of the graduates indicated that they enter City Tech for a better job compared to 53% of those who did not complete their program. Fifty-eight percent of those who

did not return after their first semester scored below 40 on the Brookover Self-concept Scale, compared to 19% of the graduates.

V. Regression Analysis: Factors which Contribute to Graduation

In order to round of the profile of the City Tech graduate I performed regression analysis using: 1) parents' education, 2) family income, 3) educational background, 4) reasons for entering college, 5) degree aspirations and 6) Self-concept of ability as independent variables. The dependent variable used was the individuals' survival rate at City Tech as indicated by graduation.

A five stage regression analysis was undertaken using the above mentioned dependent and the independent variables.

Generally, only significant coefficients are discussed, the exception being when non-significant variables shed light on the substantive discussion. The substantive discussion relates only to the last stage of the regression analysis (stage 5) found on table 11.

There is a massive body of research which points to social origins as significant predictors of college performance. An understanding of family income and parents educational background is therefore an important factor in the analysis of college performance for two important reasons: 1) they are a measures of social status (because it is a critical element of the class structure), and 2) the lack of family resources (research suggests) may result in direct educational disadvantage because of a

differential socialization process (the same social concept has different meanings and consequences for members of different class groups (Bourdieu, 1977)).

These regression data suggest that if the combined family income is $20,000 or more, there is a 12% increased chance that the individual will graduate after the eighth semester. Similarly, if the father has some college or more, this factor produces a gap of 15% in the likelihood that the student will graduate after the eighth semester of study. These findings may be suggesting the importance of cultural capital on the individuals' college career.

Educational background proved to be an important predictor of academic success. Table 11 suggests that for every 5 point difference in high school average, there is a 6% increased chance that the student will graduate after the eighth semester. Additionally, for every 3 college preparatory course difference taken in high school, produces an increment of nearly 7% in the likelihood that the individual will graduate after the eighth semester.

For every 7 point difference on the CUNY Reading Assessment Examination, there is a 9% increased chance the individual will graduate after the eighth semester. Additionally, for every 2 point difference on the CUNY Writing Examination, there is a 10% increased chance that the individual will graduate after the eighth semester.

Over the last three decades social scientists have examined self-concept's place in human growth and development. Many

congruent principles have emerged as a result of these inquires: 1) self-concept has a central place in guiding human behavior; 2) self-concept seeks consistency and stability; 3) self-concept is based on roles people play; 4) self-concept is a product of the social context and the feedback of others and 5) a positive self-concept is correlated with academic achievement and success.

These data suggest that self-concept of ability (Brookover self-concept of Ability Scale) was a predictor of graduation. The data in Table 11 suggests that for every 3 point difference in the Brookover Self-Concept of Academic Ability Scale, there is a 2% increased chance that the individual will graduate after the eighth semester.

Table 12 is a graphic expression of the factors which have effected the graduation rate of this sample. The information found on Table 12 clearly suggests the importance of such cultural and economic capital factors as father's education and family income for this sample. The impact of these cultural capital factors virtually jump off the graph at the reader.

Table 12 also suggests that the number of college preparatory courses this sample was exposed to in high school, high school average and the being proficient in the CUNY Assessment Examinations in Reading and Writing during their first attempt all played an important role in the outcome of graduation for this cohort.

Finally, Table 12 suggests that a positive academic self-concept is a factor which contributes to graduation, but self-

concept was not as important as the students' social origins and educational background.

VI. Conclusions:

In order to illustrate the implications of these data let us look at two hypothetical students entering New York City Technical College (CUNY) for their first semester of study. The first student enters this college (the information now being cited are means for this sample) with a combined annual family income of $20,000 or less, his/her father has not attended college, has earned a 72 high school average, a 70 high school average in mathematics, has completed 9 college preparatory courses in high school, earned a score of 27 on the CUNY Reading Examination, a 26 on the CUNY Mathematics, a 6 on the CUNY Writing Examination and has scored a 40 or less on the Brookover self-concept of Ability Scale.

The second student enters with a combined family income of $20,000 or more, has a father who has had some college or more, has earned a 77 high school average, a 76 high school average in mathematics, has completed 12 college preparatory courses in high school, scored a 34 on the CUNY Reading Examination, scored a 32 on the CUNY Mathematics Examination, an 8 on the CUNY Writing Examination and scored a 43 on the Brookover self-concept of Ability Scale. These data suggest that the second student has a 13% increased chance of graduating from City Tech in the eighth semester over the first student.

The implication of the data within this report translates

into the difference between an individual graduating from this college and entering the work force thereby becoming a productive tax paying citizen - or not; and/or attending a Baccalaureate program with the possibility of attaining the relative economic and social benefits of the Bachelor's over the Associates degree. In either case, graduation from City Tech may mark the being of the end for intergenerational poverty for many of the City Tech students.

Moreover, the consequences of these data should not only be seen as increased life chances for the individual, but for his/her children (as these data clearly suggest on Table 12).
Presently, as the State of New York becomes increasingly concerned with the "bottom-line" of public higher education, many of the above mentioned individuals will be unable to attend college. This most certainly will save millions of dollars today, but in the long run it is short sighted. For what benefit is saved money today when tomorrow is engulfed by social upheaval and squalor?

"The best preparation for the future, is the present well seen to, and the last duty done"
George MacDonald (1824-1905)

Table 1 **Mother's Education**

N=307

Mother's Education		
Some H.S.or Less	H.S. Grad.	Some College or More
44%	28%	28%

Table 2 **Father's Education**

N=307

Father's Education		
Some H.S.or Less	H.S. Grad.	Some College or More
41%	29%	19%

Table 3 Family's Income Before Taxes

N=307

Income	
Less than 9,9999	44%
10,000 to 15,999	15%
16,000 to 24,999	15%
25,000 to 29,999	9%
30,000 or More	16%

Table 4 Academic Units taken In High School

N=307

Academic Units	6 or Less	7 to 10	11 to 13	14 to 16
X=9.8	19%	47%	19%	16%

Table 5 High School Averages

N=307

High School Averages			
70 or Less	71 to 75	76 to 79	80 or Higher
49%	24%	13%	13%

Table 6 High School Average in Mathematic

N=307

High School Average in Mathematics			
70 or Less	71 to 75	76 to 79	80 or Higher
67%	16%	13%	4%

Table 7 High School Average in English

N=307

High School Average in English			
70 or Less	71 to 75	76 to 79	80 or Higher
43%	22%	17%	19%

Table 8:

Non-Proficiency In CUNY Assessment Examinations

N=307

CUNY Assessment Examinations		
Math	Reading	Writing
67%	63%	67%

Table 9 **Degree Aspiration**

N=307

AA	BA	MA or Higher	Not Sure
36%	28%	19%	17%

Table 10: **Descriptive Data of the Graduates**

N=307

	Graduates	Program Incompletion
Mothers' Education Less than High School	18%	48%
Fathers' Education Less Than High School	15%	53%
Family Income < 20,000	19%	62%
College Preparatory HS Courses 10 or greater	50%	25%
First Time Proficiency		
CUNY Assessment in Reading	55%	41%
CUNY Assessment in Math	42%	28%
CUNY Assessment in Writing	40%	29%
HS Average in Math < 74	17%	51%
< 40 in Self-concept of Ability	19%	58%
Better Job	63%	53%

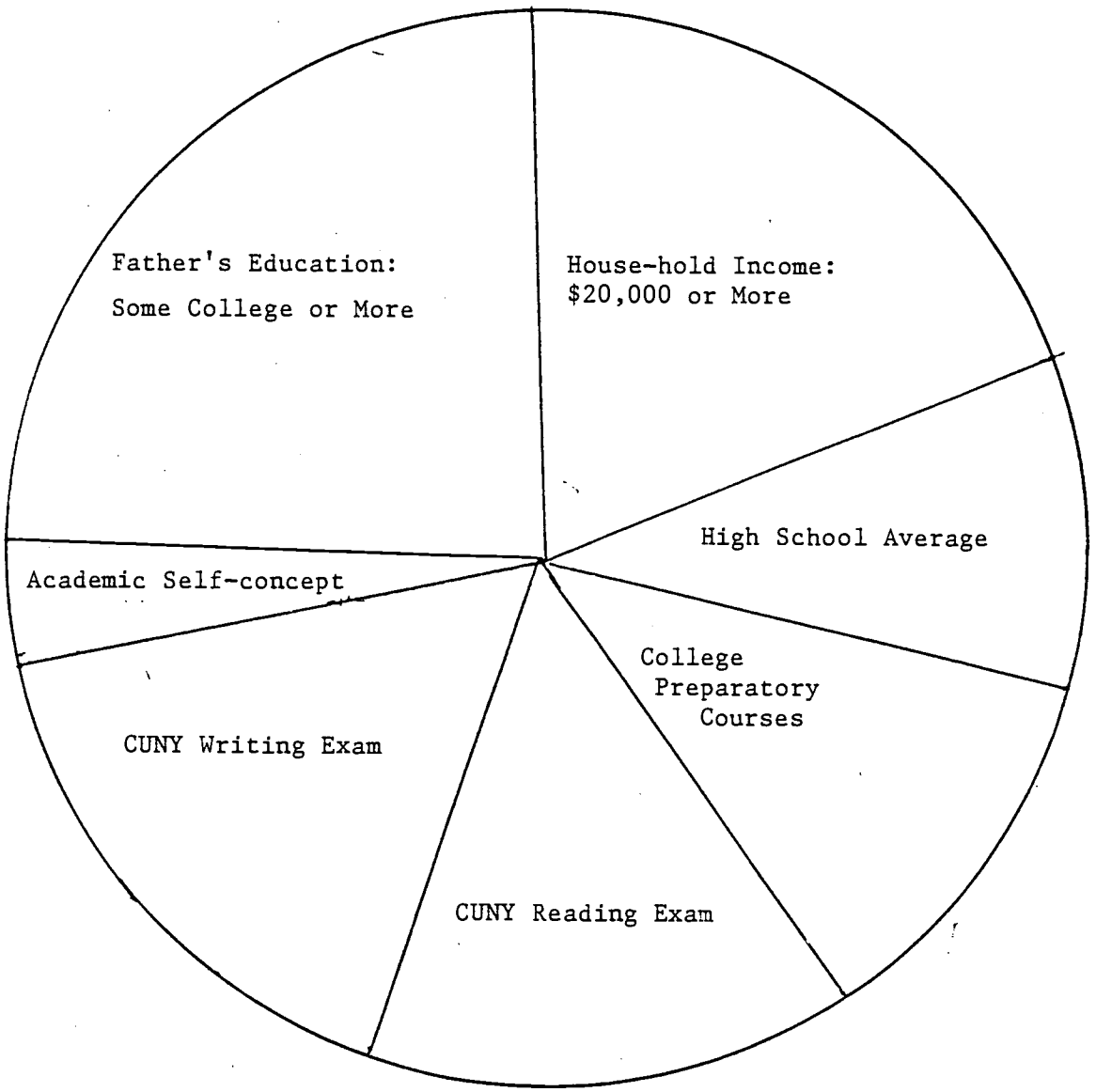
Table 11: Graduation as a Function of Social Origins, Educational Background, CUNY Assessment Examinations, Reasons for Entering College and Self-concept

N=307

	Graduation b	beta
Social Origins		
Mothers' Education	*	*
Fathers' Education	.153	.096
Family Income	.108	.075
Educational Background		
High School Average	.012	.105
HSA in English	*	*
HSA in Mathematics	*	*
College Preparatory Courses taken in HS	.024	.119
CUNY Assessment Examinations		
Reading	.014	.170
Math	*	*
Writing	.050	.141
Self-concept of Ability	.006	.031
Reasons for Entering College	*	*

R-square = .2155
P< .001
* = Not Significant

Table 12 Factors Which Influence Graduation Rates



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Signature: Elena Gerardi Ph.D.

Printed Name/Position/Title: Assist. Prof.

Organization/Address: New York City Technical College 300 Jay Street Bklyn, N.Y. 11201

Telephone: (718) 260-5080

FAX: (718) 260-5010

E-Mail Address:

Date: 8/30/96

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