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**EXPANDED EXPLORATIONS INTO THE
PSYCHOLOGY OF ENTREPRENEURSHIP:
FINDINGS FROM THE 2001-2002 STUDY OF NFTE
IN TWO BOSTON PUBLIC HIGH SCHOOLS**

**Project IF: Inventing the Future
Harvard Graduate School of Education**

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Findings from the 2001-02 Study of NFTE
Project IF/Harvard Graduate School of Education

Executive Summary

The 2001-2002 Harvard report focuses on key findings from the first phase of the NFTE study. The findings provide the first substantial clues regarding NFTE's larger impact on the students it serves. For these initial findings to be considered definitive, they will need to be replicated through continued studies of larger samples of NFTE students. Nonetheless, even when taking all appropriate cautions, the key findings that emerged from the analysis suggest exciting possibilities.

Following its pilot study in 2000-2001, the Harvard research team commenced the first wave of the NFTE New England study, collecting data from two Boston public high schools – Brighton High and East Boston High – during the 2001-2002 academic year. Within both schools, NFTE is taught to students through a program called “School to Career,” a collaboration of the Boston Public Schools and the Boston business community to integrate the academic content of what students learn in schools with careers and jobs they could pursue after graduation. Therefore, every student in the Boston public school system is required to take a School to Career “Pathway” class. NFTE students were in the “Business” or “Entrepreneurship” pathway. Comparison students came from pathways involving health and education themes. The research team collected data from 312 students – 158 NFTE and 154 Comparison students.

We present two types of findings in this report: findings related to change over time, and findings related to composite data gathered over the 2001-02 academic year. The “change over time” data is derived from scores on the surveys administered by our research team at pre and posttest. The composite data was collected via school records generated at the end of the school year, and includes student grades, attendance, and tardiness.

College Interests. The strongest theme to emerge from this phase of the study revolved around the issue of “going to college.” This theme was picked up through the Across Time Orientation Measure (ATOM), which is used to assess students' present interests and future hopes and worries. At the beginning of the school year

(pretest), NFTE students expressed less interest in college, and fewer hopes and worries related to potentially attending college, relative to the Comparison group. This finding is not surprising. The NFTE students in the study were part of a “business pathway” within Boston’s School to Career system, while the Comparison sample came from a pathway focused on careers in health and education. While the health and education pathways are not explicitly oriented toward high-end medical and education careers, such as becoming a doctor or professor, the pretest findings suggest that students in this pathway are generally more college oriented than those in the business pathway. At the end of the school year (posttest), the picture was very different. The NFTE sample not only caught up to the Comparison group in terms of college-related interests and future hopes and worries, but they clearly surpassed their counterparts. Differences in the change from pretest to posttest were statistically significant, with NFTE students’ scores on College Interests doubling over the course of the year, while the Comparison group scores remained the same.

Occupational Aspirations. Related to the college interests finding, NFTE students surpassed the Comparison group in terms of *Occupational Aspirations*. This variable was also detected via use of the ATOM, and represents the level of education required to achieve the professional goals to which the students aspire. Again, NFTE students scored lower than the Comparison group at pretest but surpassed their peers at posttest. The change in the NFTE score from pretest to posttest showed a strong statistical trend, which would prove to be statistically significant if this finding can be replicated with a larger sample of students. This Occupational Aspirations finding is particularly interesting in light of differences between the two groups that might be inferred from the students’ placement in their respective pathways. Again, we would expect students in the health and education pathways to hold a higher level of professional aspiration, on average, than their peers in the business pathway, simply by virtue of the training required for jobs within these broad professional arenas.

Combining College Interests and Occupational Aspirations. When we look at the findings on college interests and occupational aspirations together, we have the convergence of a clear theme: The NFTE group became more attuned to college and the career opportunities that go along with it over the course of the school year in

which they participated in the NFTE program. By year's end, the NFTE students showed more college-related interest, hopes, and worries than their peers in the Comparison group, and became equally oriented toward careers requiring some level college preparation or professional training. Together, these findings suggest that NFTE may be inspiring participants to become interested in pursuing careers that require professional training. This finding provides an important first step in answering the question of whether NFTE may inadvertently direct students away from college and toward more immediate entrepreneurial pursuits. Although further data will be required to answer the question more definitively, these results suggest that NFTE encourages students to pursue further education en route to the careers – entrepreneurial or otherwise – that they desire.

Change in Independent Reading. The Hemingway Measure of Adolescent Connectedness (Hemingway) allowed us to assess connectedness in the educational areas of school engagement, teacher and peer relationships, and independent reading. The Hemingway also provides a means for comparing connectedness in these areas with the students' experiences of connection in such social arenas as friendships, family relationships, and community or neighborhood support. Our expectation was that NFTE would foster connectedness in the school-related areas, relative to the other areas, and thus in our analysis of the Hemingway we focused on the school-related subscales.

Interestingly, when examining the 13 domains of connectedness that the Hemingway assesses, NFTE participation was most strongly associated with improved scores in independent reading. That is, relative to the Comparison group, the NFTE students changed more over the course of the school year in how much time they spent reading on their own, and in their general connection to or enjoyment of reading. Consistent with our college interest findings reported above, NFTE students began the school year with a lower level of expressed interest in independent reading relative to the Comparison group, but by the end of the year this picture was reversed. While the difference between year-end scores within NFTE and the Comparison group is quite small, comparing the change in scores from pretest to posttest reveals a more substantial and statistically significant finding, with NFTE

students increasing in independent reading by approximately the same amount that the Comparison group declined.

A potential “Latino Effect.” Finally, a strong pattern emerged from the study that showed clearer results for Latino students than either African American or White students. It’s too early to tell whether this is pure coincidence versus something about the curriculum and approach that is particularly compelling to this sample of students. Relative to the White and African American students in the NFTE sample, Latino students improved more not only on the independent reading subscale of the Hemingway, but also on a larger *school connectedness* subscale. Furthermore, the Latino students in NFTE improved more in these areas than the Latino students in the Comparison group who actually declined more than their White and African American peers. This pattern is supported by an examination of school grades, absenteeism and tardiness collected at yearend (we do not have this data for the students from the prior year). While absenteeism rates were similar across racial groups, grades and tardiness showed different patterns for Latino students. Latino students in the NFTE group had better grades and were tardy less than those in the Comparison group, a finding that is reversed for the African American and White students.

Given the convergence of these positive findings for the Latino students, it is worth asking whether NFTE is reaching these students in a particularly compelling way. A plausible explanation is that many of the Latino students were either first or second-generation immigrants (we do not have exact numbers to verify the degree of immigrant participation in the study). It is well supported that immigrants are drawn to entrepreneurial opportunities in the United States. Might NFTE represent a unique opportunity for Latino immigrants as well as other immigrant populations? This potential finding will be explored further in subsequent phases of the study.

The findings presented here are spelled out in more technical detail in the full report. Clearly, this first phase of the Harvard study suggests that NFTE is having an important effect on college and occupational interests, and points to particular areas that need to be examined more closely with Latino and perhaps immigrant participants. The next phases of the study include a longitudinal follow up of the

students from Phase 1 (presented here) and new analyses of another cohort of students from Phase 2, a similarly sized Boston-based study. Finally, the Harvard research team is assisting NFTE in the design of organization-wide data collection. Collecting selected data on larger groups of NFTE participants from around the country will help us better understand how the program is affecting students' entrepreneurial knowledge base as well as related educational and occupational outcomes.

Chart 1.

Boston Public Schools 2001-2002
N=312

Key Change Findings* - NFTE vs. Comparison

* change from pretest to posttest, represented in overall percentages

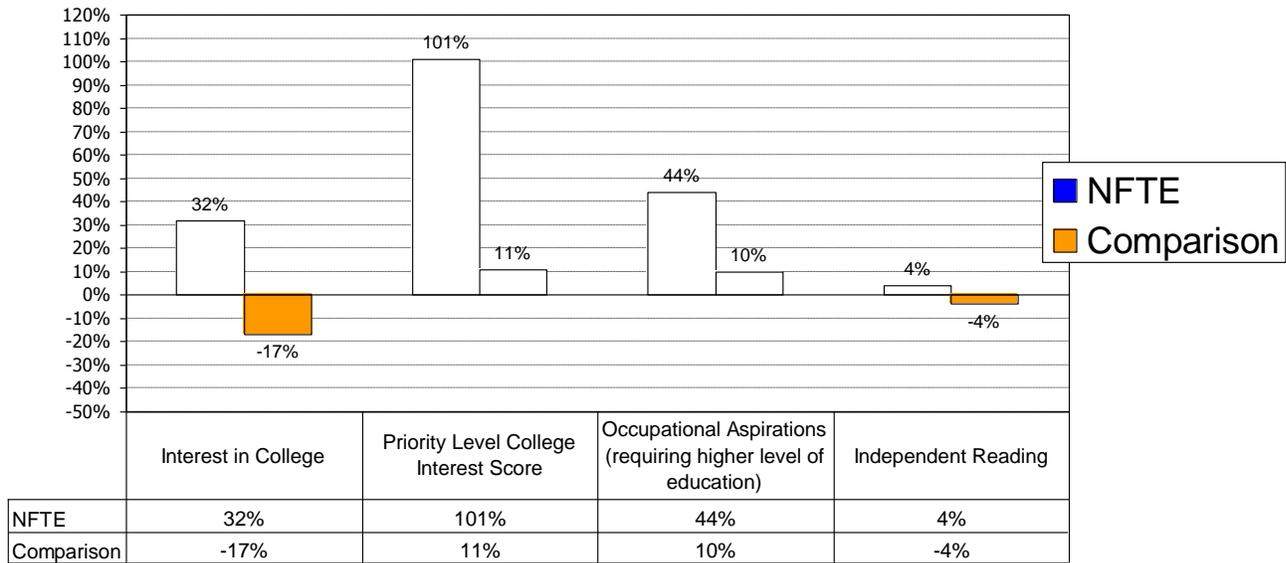


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INTRODUCTION: PURPOSE AND NATURE OF THE STUDY

In his book, *The Young Entrepreneur's Guide to Starting and Running a Business* (1996), Steve Mariotti, the Founder and President of NFTE (National Foundation for Teaching Entrepreneurship), states that he began NFTE out of the conviction that teaching inner-city young people entrepreneurship skills would help them “achieve financial independence and that, by doing so, they [could] improve their lives and the economic lives of their neighborhoods” (p. 3). Mariotti came to this conviction through his experiences teaching business, math, and special education to students in various New York City public schools. That experience, he claims, showed him how little low-income, urban students know about the workings of our economy and their place in it. This lack of knowledge, in turn, systematically denies such young people opportunities for pursuing the dreams and goals that are thought to mark healthy adolescent idealism. Without ideals to pursue, youth are left with little reason to invest in education, in their futures, and in their own development.

While the concerns that sparked Mariotti's own entrepreneurial venture are widely shared by urban educators and youth developmentalists, the belief that teaching fundamental business and entrepreneurial skills could serve to change the future prospects of low-income urban youth is open to debate. The study undertaken here is an effort to bring further information to bear upon the argument. After more than a decade and a half of teaching entrepreneurial skills through NFTE, Mariotti and his colleagues have learned that many of the young people they train embrace the nature and purpose of the curriculum, with a fair number of NFTE graduates going on to start their own businesses. Andrew Hahn and his research team from Brandeis University, for example, found that one third of NFTE graduates, at the time of the follow-up study, owned businesses and that over three quarters of the surveyed sample planned on running a business in the future (Hahn & Leavitt, 1997). Even accounting for these positive findings, however, it is clear that a relatively small percentage of NFTE students will actually open businesses, and even fewer will maintain their status as business owners. Some will benefit from the lessons of the training and perhaps go on to study business and ultimately work within the business sector. And still others will be influenced at the

level of their own financial planning. Overall, though, it is unclear at this time just how the many students who now participate in NFTE's programming actually benefit from that experience. The current study is designed to help answer this question.

If entrepreneurship were defined simply as "opening one's own business," the design for this study would be quite straightforward. Entrepreneurship, however, has come to mean more than simply opening and developing a business. The word has come to represent the skills and attitudes associated with successful entrepreneurs. The NFTE curriculum is consistent with this notion. It teaches careful planning, strategizing, critical thinking, collaboration skills, and calculated risk taking, along with the more basic business principles needed to open a business. Our study, in part, attempts to clarify the entrepreneurial skills and attitudes that are promoted by NFTE, and to understand the connection between those skills and attitudes and larger life goals.

Building from this larger picture of entrepreneurship, our research questions have less to do with opening a business, and more to do with the skills needed for successful entrepreneurship or entrepreneurial endeavors. As such, we refer to our study as an inquiry into "the psychology of entrepreneurship," with psychology defined as the beliefs, values, attitudes, and behaviors associated with entrepreneurship. A study of this nature requires multiple steps or phases. In the earliest phase of our work, we conducted a pilot study in which members of our research team were trained in and taught a reduced form of the curriculum. This allowed us to become intimately familiar with the model and its potential for reaching students. Stemming from this pilot work (conducted during the 2000-2001 academic year), we designed a regional phase of our study (the NFTE New England phase) to be conducted largely in Boston, and planned for a larger, national scale-up.

In this report we present findings from the first year of the New England Phase of our work (2001-2002). The report is organized around "key findings" from the study, as these findings provide the first substantial clues regarding NFTE's larger impact on the students it serves. It should be noted that all findings reported here provide first steps in understanding the program's impact. For these findings to be considered definitive, they will need to be replicated through continued studies of larger samples of NFTE students. Nonetheless, even when taking all appropriate cautions, the key findings that emerged

from our analysis suggest exciting possibilities – possibilities related to the impact on those students served in the sample we studied, and on those served by NFTE throughout the country and abroad. Furthermore, the findings from this phase of the study provide additional direction for subsequent phases, and potentially raise questions for the program related to the ongoing structuring and revision of its curriculum and training format.

BRIEF OUTLINE OF THE PROJECT AND DESCRIPTION OF THE SAMPLE

Following our pilot study in 2000-2001, the Harvard research team at Project IF commenced the first wave of the NFTE New England study, collecting data from two Boston public high schools – Brighton High and East Boston High – during the 2001-2002 academic year. Within both schools, NFTE is taught to students through a program called “School to Career,” a collaboration of the Boston Public Schools and the Boston business community to integrate the academic content of what students learn in schools with careers and jobs they could pursue after graduation. Therefore, every student in the Boston public school system is required to take a School to Career “Pathway” class. Our NFTE students were in the “Business” or “Entrepreneurship” pathway. Our Comparison students came from pathways involving health and education themes. As presented in Table 1, we collected data from 312 students in all — 158 NFTE and 154 Comparison students.

*Table 1. Number of students per site
Boston Public School sample 2001-2002 (N=312).*

	East Boston	Brighton	Both
<u>NFTE</u>	100	58	158
<u>Comparison</u>	97	57	154
<u>Total</u>	197	115	312

Our goal was to collect data from a comparison class that closely resembles our NFTE students. For the most part we succeeded, although some sample differences can be noticed. As can be seen in Table 2, more girls tended to be in the Comparison class. In

addition, there were some differences racially, with a particularly large representation of Latinos in NFTE. We also noticed that more Comparison students tended to take “Honors” or “Advanced Placement” courses. If a student took either an Honors or Advanced Placement Math or English class, we called them “High Achieving.” Table 2 shows that about twice the number of high achievers were in the Comparison group (39) versus the NFTE classes (19). As we will discuss in depth later, capturing socioeconomic, racial, achievement, and other demographic information led us to some interesting findings. For more information about our methods of data collection and analysis, please refer to Appendix A. An outline of our measures can be found in Appendix B.

*Table 2. A Demographic Profile of NFTE vs. Comparison students
Boston Public School sample 2001-2002 (n=312).*

	NFTE n=158		Comparison n=154	
	n	%	n	%
<i>Gender</i>				
Male	75	47%	57	37%
Female	83	53%	97	63%
<i>Race</i>				
African American	50	32%	67	44%
White	25	16%	39	25%
Asian	13	8%	8	5%
Latino	68	43%	39	25%
Other/No Response	2	1%	1	1%
<i>Other Categories/Statistics</i>				
Students in Special Education classes	19	12%	17	11%
Students Receiving Free/Reduced Lunch	118	75%	101	66%
Students in AP/Honors Math and/or English Classes	19	12%	39	25%
Average Absenteeism for 01-02 Academic Year	22 days		19.5 days	
Average Tardiness for 01-02 Academic Year	25.4 days		19 days	

KEY FINDINGS

In this section of the report, we present the major findings from the 2001-2002 academic school year. This opening section is designed to make the key findings easily accessible and interpretable within the overall purpose of the research study. Subsequent

sections of the report present more detailed support for these findings, as well as providing information on “nonsignificant” or less substantial outcomes.

We present two types of findings in this report: findings related to change over time, and findings related to composite data gathered over the 2001-02 academic year. The “change over time” data is derived from scores on the surveys administered by our research team at pre and posttest. The composite data was collected via school records generated at the end of the school year, and includes student grades, attendance, and tardiness. Implications for interpreting the change data versus the composite data are presented in the sections that follow.

PART I: CHANGE OVER TIME FINDINGS

Interests, Hopes, and Worries

Perhaps the most important findings from 2001-02 study are derived from the Across Time Orientation Measure (ATOM), which assesses the nature and degree of the students’ present interests and future hopes and worries. As discussed in depth in Appendix C, which presents a more complete depiction of the ATOM and its outcomes from this phase of the study, a person’s interests reflect their orientation to those aspects of life that they find most important and/or gratifying. Typically, the stronger the interest, the more one has and will invest energy into that area. Interests can range from hobbies and leisure activities to philosophical concerns and lifelong goals.

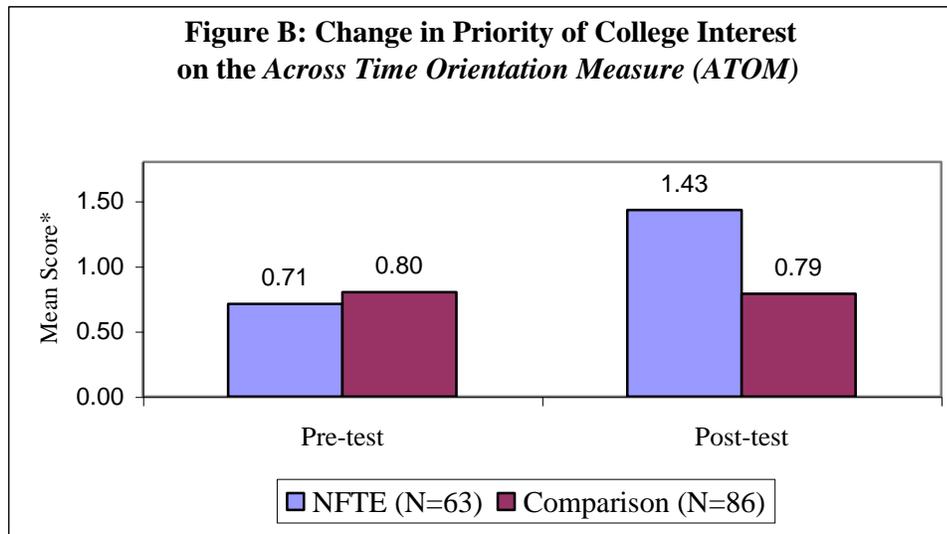
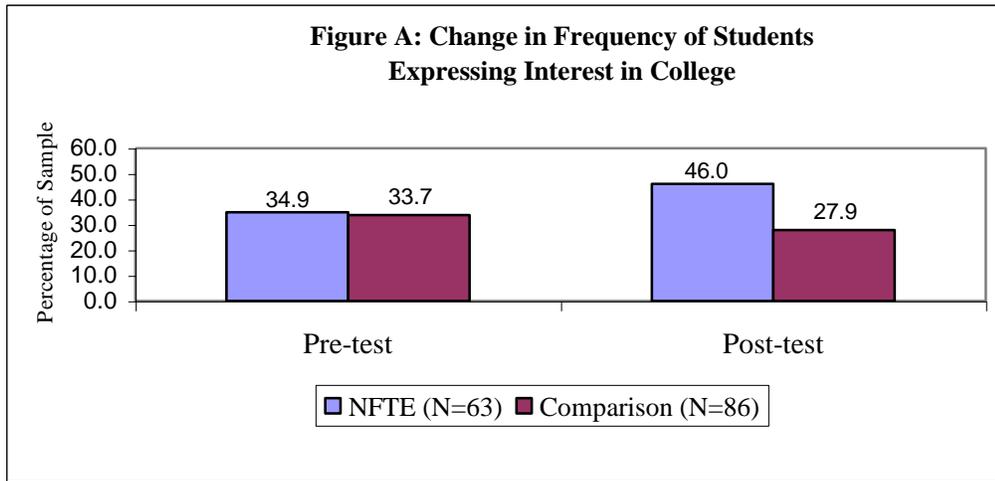
In our measurement of interests with the ATOM, we ask students to list their strongest interests without directing them toward particular categories, such as hobbies or education, or career pursuits, for example. Then, after the listing is completed, we ask them to rank order their top three choices and to provide a justification for that ordering. Accordingly, we are able to capture what comes to mind for the students as they reflect on their interests rather than asking them to rate our predetermined categories of what should be important to them. This makes the ATOM a unique tool, as it allows us to explore the wide range of interests potentially held by a person or group of people. The *Future Hopes and Worries* section of the ATOM is organized similarly to the *Present Interests* section. The difference is that it explicitly asks students to project into the future and list their most important future hopes and worries, and then to rank order

the importance of their top three hopes and/or worries. For this phase of the study, we merged hopes and worries into one section, based on previous findings that the two often coincide; that is, what one most hopes for is often what one worries about most as well. For example, if going to college is a strong hope, students also may worry about getting accepted or being able to afford tuition. Therefore, in the present analysis, hopes and worries are clustered together as a singular representation of what might be termed *future orientation*.

Going to College. By far, the strongest, most consistent theme to emerge from our ATOM analysis revolved around the issue of “going to college.” At the beginning of the school year (pretest), NFTE students, on average, expressed less interest in college, and fewer hopes and worries related to potentially attending college, relative to the Comparison Group. This finding is not surprising. The NFTE students in our study were part of a “business pathway” within Boston’s School to Career system, while the Comparison sample came from a pathway focused on careers in health and education. While the health and education pathways are not explicitly oriented toward high-end medical and education careers, such as becoming a doctor or professor, the pretest findings suggest that students in this pathway are generally more college oriented than those in the business pathway.

At the end of the school year (posttest), the picture was very different. The NFTE sample not only caught up to the Comparison Group in terms of college-related interests and future hopes and worries, but they clearly surpassed their counterparts. At posttest the NFTE students expressed more interest in college and a greater degree of hope and worry related to future college attendance (see Figure A). Furthermore, differences in the change from pretest to posttest were statistically significant, particularly in the area of College Interests, where the NFTE students changed significantly more than the Comparison Group ($p < .01$). More specifically, using our standardized scoring scheme, which takes into account how students rank their interests, NFTE students’ scores on College Interests doubled from pretest to posttest (.71 to 1.43), while the Comparison Group remained the same (.80 to .79) (see Figure B). A difference in change of that magnitude could not have been anticipated. While it is typical for a group starting higher at pretest to decline a little, and for a group starting lower to increase slightly, a pattern

such as that detected here must be interpreted as much more than chance. This difference is quite large and opens up important questions related to NFTE’s potential impact.



*The Harvard team developed a weighted scoring system that takes into account how students have ranked their responses according to importance. The possible range for the scoring system is 0 – 10. The actual range for the entire sample is 0 – 5.83

Occupational Aspirations. As would be expected, many of the NFTE and Comparison Group students listed occupation or career interests, hopes, and worries. Upon examining these responses, it became clear that embedded within them was either an implied or explicit level of education typically needed to attain the occupations or careers to which the students aspired. Therefore, we created a scoring scheme for

assessing Occupational Aspirations, which we define as the level of education or training required to achieve the highest-level aspiration reported. That scheme as was structured as follows:

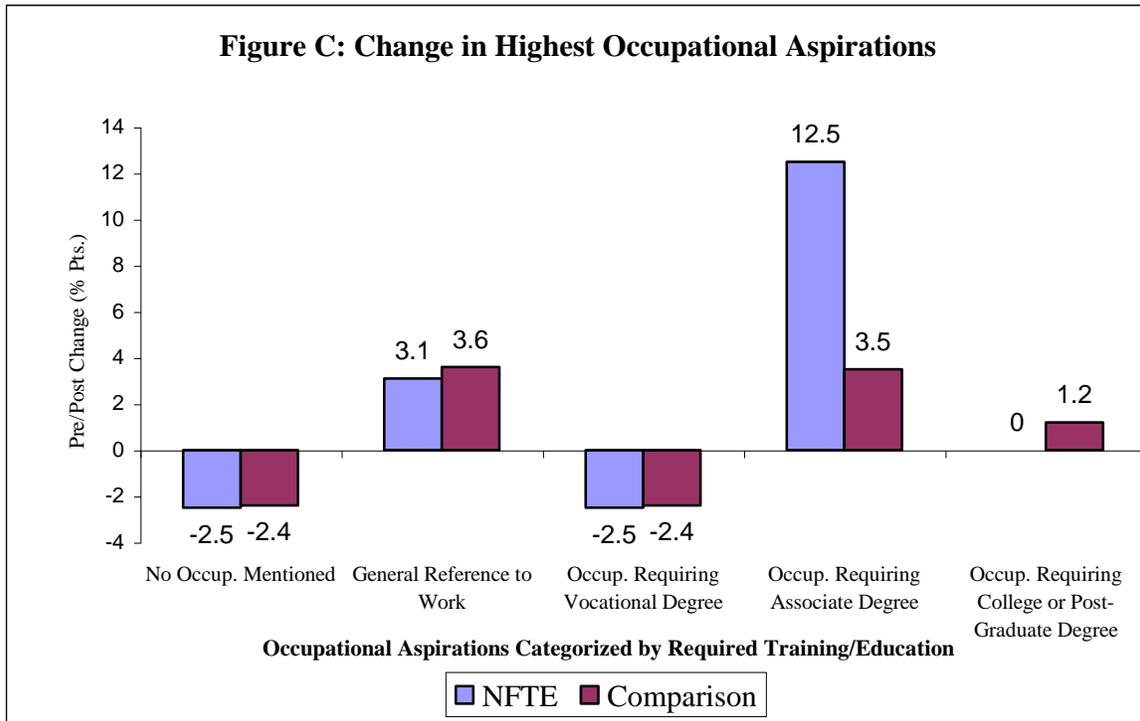
- 0: No Professional Aspirations Mentioned
- 1: General References to Work
- 2: Vocational or significant job training
- 3: Associate Degree/Career/Profession
- 4: 4th Year College and Postgraduate Studies

As this schema indicates, students scores ranged from 0 if they listed no occupational or career aspirations in the ATOM to 4 if they listed an occupation or career aspiration typically requiring a 4-year college degree or beyond. We chose to collapse post-graduate and the bachelor's degree into one category for this report, based on the relatively small number of responses in the postgraduate category (we actually analyzed the data both ways, and got similar results).

Consistent with the College finding above, NFTE students scored lower than the Comparison group at pretest on the *Occupational Aspirations* scale (1.83 vs. 1.60), but again surpassed that group, although slightly (1.95 vs. 1.93), at posttest. The change in the NFTE score from pretest to posttest approached statistical significance ($p < .10$) – that is, showed a trend toward significance although not quite reaching it. If this trend holds up with a larger sample of students, those results would be significant.

This Occupational Aspirations finding is particularly interesting in light of differences between the two groups that might be inferred from the students' placement in their respective pathways. Again, we would expect students in the health and education pathways to hold a higher level of professional aspiration, on average, than their peers in the business pathway, simply by virtue of the training required for jobs within these broad professional arenas. And, indeed, when we examine the results more closely, we see that the Comparison Group has more students who score at the highest level of Occupational Aspiration (college degree or beyond) at both pretest (19% vs. 11%) and posttest (20% vs. 11%). In fact, we see from these results, that neither group changed at the high end of the scale. However, at the next level down (Associate Degree), the NFTE

students change substantially from pretest to posttest (27% to 39%), while the Comparison Group changes only slightly (31% to 34%) (see Figure C). Therefore, it is at the Associate Degree level of Occupational Aspiration where the NFTE group made the largest positive shift, relative to the Comparison Group.



Combining College Interests and Occupational Aspirations. When we look at the findings on college interests and occupational Aspirations together, we have the convergence of a clear theme: The NFTE group became more attuned to college and the career opportunities that go along with it over the course of the school year in which they participated in the NFTE program. By year’s end, the NFTE students showed more college-related interest, hopes, and worries than their peers in the Comparison Group, and became equally oriented toward careers requiring some level college preparation or professional training. Together, these findings suggest that NFTE may be inspiring participants to become interested in pursuing careers that require professional training. This finding provides an important first step in answering the question of whether NFTE

may inadvertently direct students away from college and toward more immediate entrepreneurial pursuits. Although further data will be required to answer the question more definitively, these results suggest that NFTE encourages students to pursue further education en route to the careers – entrepreneurial or otherwise – that they desire.

Fostering Connectedness To Learning

A central question guiding our research is whether NFTE fosters an enhanced sense of connection to school and to learning more broadly. Based on our prior pilot study of NFTE, we came to believe that the program, when taught well, would increase students' connection to school and to learning because of the active, engaging, and real-life nature of the curriculum. A common complaint among middle and high school students – particularly those struggling academically – is that school is boring, irrelevant to their future interests, and therefore not worth engaging in.

The Hemingway Measure of Adolescent Connectedness (Hemingway) allowed us to assess connectedness in the educational areas of school engagement, teacher and peer relationships, and independent reading. The Hemingway also allows us to compare connectedness in these areas with the students' experiences of connection in such social arenas as friendships, family relationships, and community or neighborhood support. Our expectation was that NFTE would foster connectedness in the school-related areas, relative to the other areas, and thus in our analysis of the Hemingway we focused on the school-related subscales.

Change in Independent Reading. Interestingly, when examining the 13 domains of connectedness that the Hemingway assesses, NFTE participation was most strongly associated with improved scores in independent reading. That is, relative to the Comparison Group, the NFTE students changed more over the course of the school year in how much time they spent reading on their own, and in their general connection to or enjoyment of reading. Consistent with our college interest findings reported above, NFTE students began the school year with a lower level of expressed interest in independent reading relative to the Comparison Group (See Table 3). By the end of the year, this picture was reversed, with NFTE students scoring somewhat higher. While the overall difference between year-end scores within NFTE and the Comparison Group is quite

small, comparing the change in scores from pretest to posttest reveals a more substantial and statistically significant finding ($p < .05$), with NFTE students increasing in independent reading by approximately the same amount that the Comparison Group declined (.11).

To determine whether the difference in reading change might be attributable to factors other than NFTE participation, we examined a range of other possible explanations, including socio-economic status (SES), gender, race, teacher and school attended. The analysis of variance (ANOVA) models created to test the influence of these factors showed that NFTE participation alone accounted for the difference we found in reading change. In particular, neither teacher nor school differences could account for the gap between the NFTE and Comparison students' averages.

Table 3. Hemingway Connectedness to Reading Change Scores mean, (standard deviation), statistical test value and significance

	N	Pre	Post	Change	Sig	NFTE/ Comparsn t-value
NFTE	63	2.67	2.78	.11	~	-1.96 *
Comparison	73	2.79	2.68	-.11	n.s.	

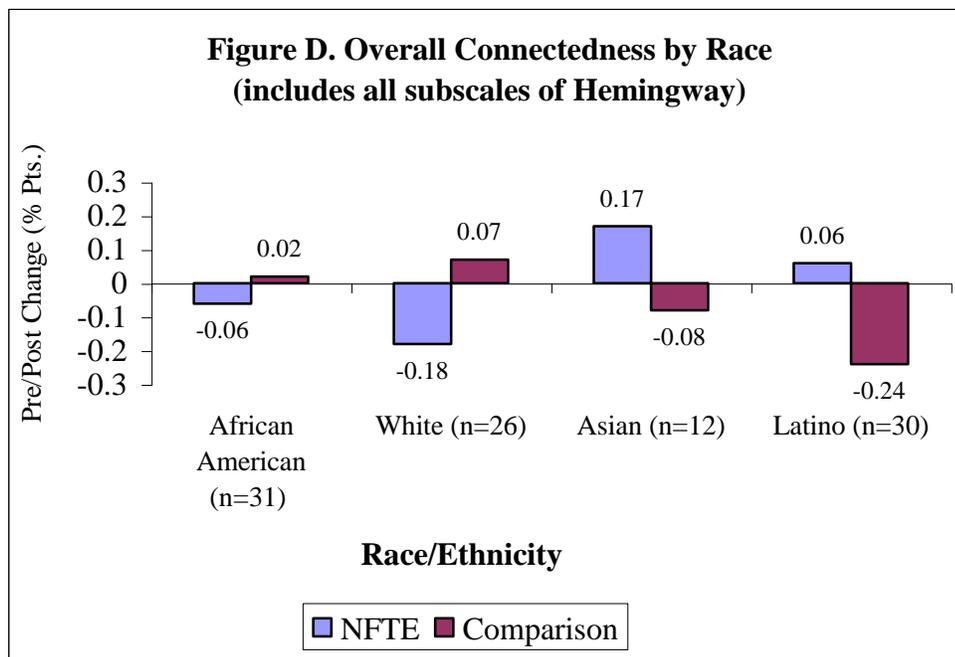
n.s. not significant

~ $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$

NFTE and Latino Connectedness. In addition to the subscale scores on the Hemingway, which assess connectedness in particular domains, the instrument also yields an overall connectedness score, which is intended to capture the general extent to which students feel connected in their everyday lives. This overall connectedness score might be thought of as the inverse of “alienation,” the opposite of feeling of being lost, uninvolved, and generally disconnected from friends, school, parents, and oneself.

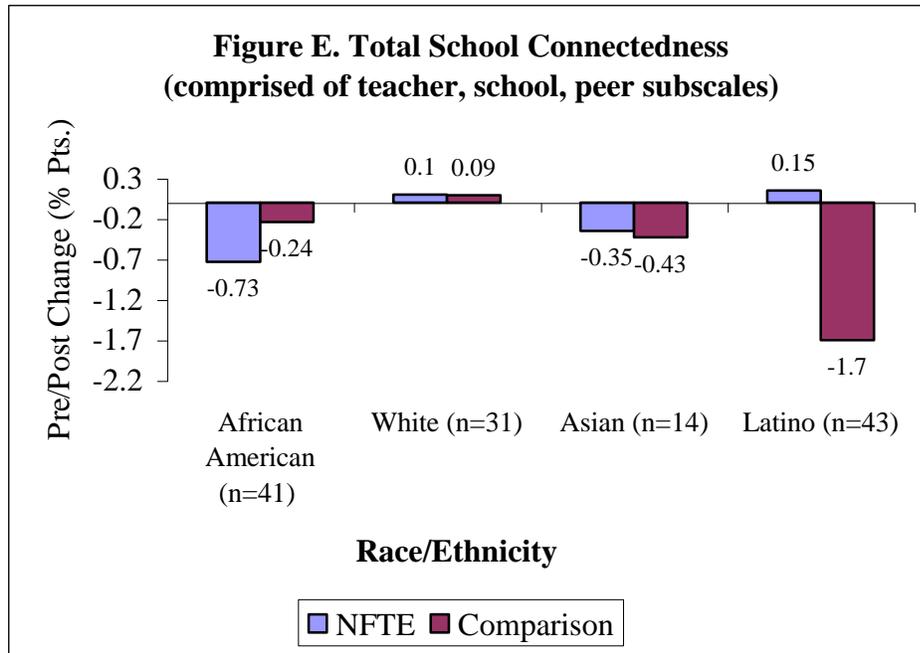
Upon examining the overall connectedness scores, we did not find a significant difference between the NFTE and non-NFTE students either at pretest or posttest.

However, when looking at the pattern of overall connectedness by race, an interesting pattern emerges. Among NFTE students, Asians and Latinos showed an increase in connectedness from pre to posttest, while White and African American NFTE students declined. Within the Comparison Group, the finding was reversed: Asian and Latino students declined, while the White and African American students increased, although very modestly. (See Figure D.) The analysis of variance test used to assess this race-based interaction was statistically significant ($p < .05$). Although the number of Asian students in the sample is too small to place much faith in their pattern of findings, the Latino sample is quite substantial, making their findings more defensible. Furthermore, the Latino pattern is consistent with other findings for this subsample of students, as will be discussed further below.



The global picture of Latino connectedness within NFTE is strengthened further when analyzing the school-specific domains of the Hemingway. By combining scores on the peer, teacher, and school subscales to construct a Total School Connectedness factor, we again found that the Latino students showed a different pattern of outcomes from their peers. That is, Latino students participating in NFTE showed a small increase in Overall

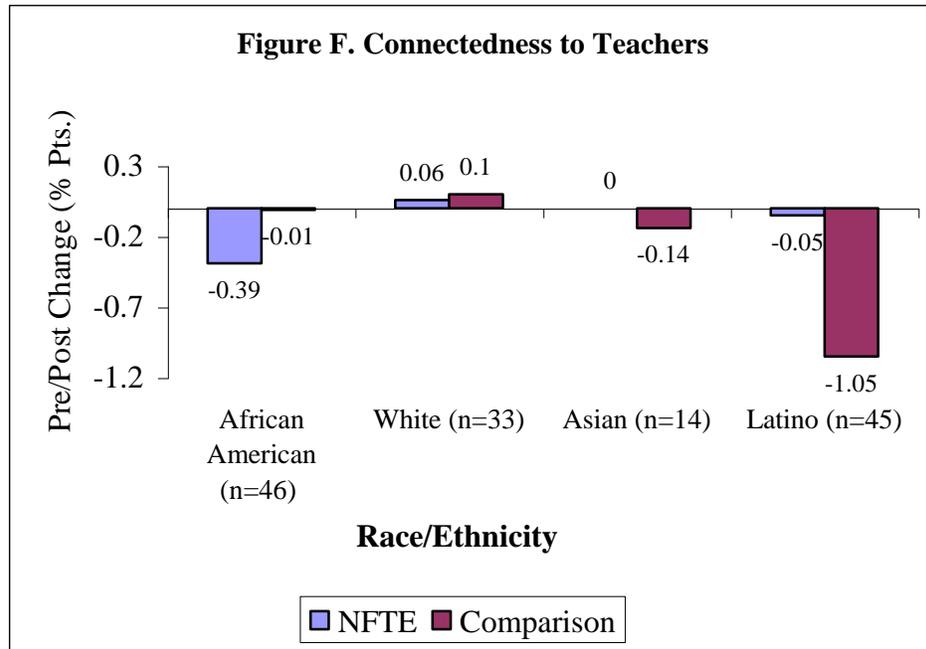
School Connectedness from pre to posttest, whereas Latinos in the Comparison group dropped dramatically during this period. White students, on the other hand, scored about the same from pre to posttest in both the NFTE and Comparison groups, while Asian and African American students dropped somewhat similarly in both the NFTE and Comparison groups (see Figure E). As with the Overall Connectedness by Race interaction, the Total School Connectedness by Race interaction is significant ($p < .05$).



When examining the Total School Connectedness by Race interaction further, we found that the primary effect was from the Teacher Connectedness subscale. Specifically, as Figure F shows, Latino students in the Comparison Group decline markedly from pre to posttest, while those in NFTE score approximately the same (very slight decline) from pre to posttest. That pattern is reversed for African American students. Those in NFTE decline in Teacher Connectedness, while those in the Comparison group stay about the same. White and Asian students show little effect either way: they stay about the same from pre to posttest regardless of group involvement.

While this NFTE by Latino interaction effect may seem trivial (given that Latino students in the NFTE group do not increase in Teacher Connectedness), we find this outcome to be very important. Latinos have the highest dropout rate of any major ethnic group in the country (Kaufman, Alt, & Chapman, 2001), and school dropout is obviously

associated with the extent to which students feel disconnected from school. The combination of Overall School Connectedness and the more targeted Teacher Connectedness findings suggest that NFTE may be having a particular impact on Latino experiences of connectedness to school, and in that sense may be serving an important function in helping to prevent Latino dropout. A longitudinal study would be required to support this interpretation; these findings suggest that such a study may be warranted.

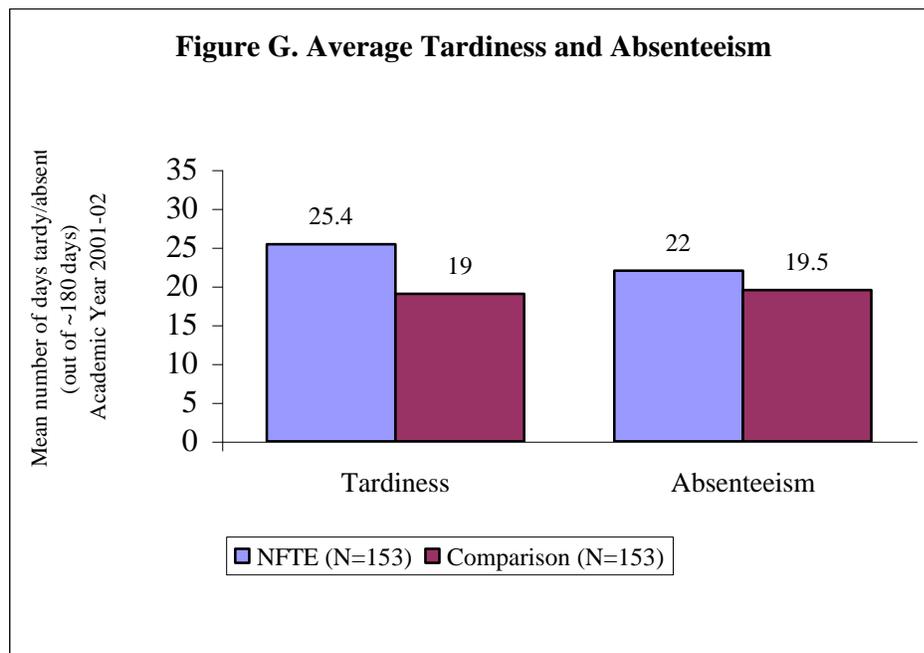


PART II: COMPOSITE DATA FINDINGS

The following findings represent composite data collected at the end of the academic year. It should be noted that this composite data does not allow for the measure of change over time; rather, it is used to explore differences between the groups of students who participated in NFTE versus those in the Comparison group. For a host of reasons, we were not able to collect school-based indicators (attendance, tardiness, grades) for the year prior to the study. Despite this limitation, the school-based data does allow us to examine critical aspects of the student populations represented in the study.

Tardiness and Absenteeism

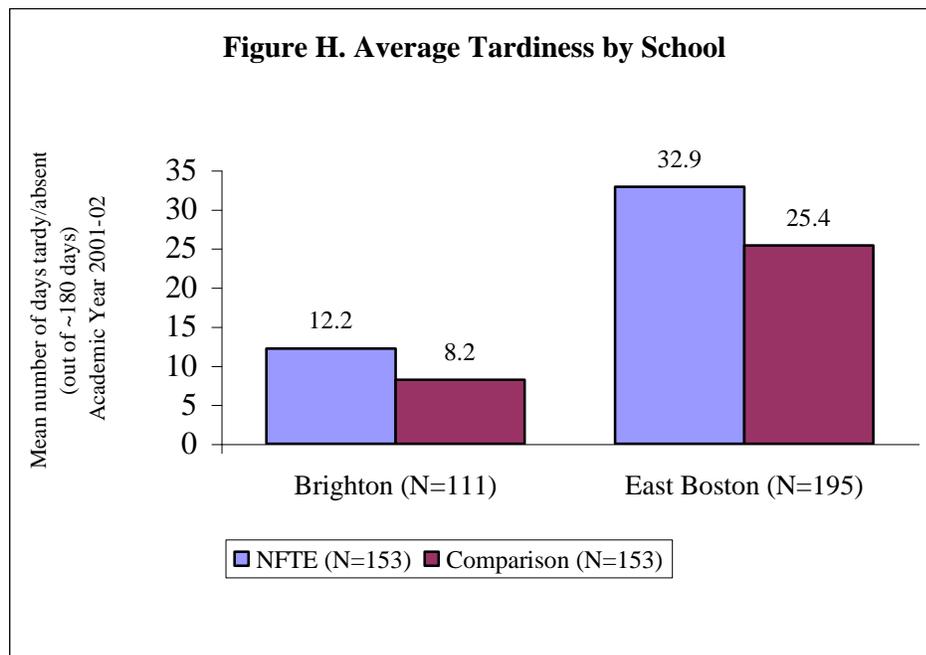
The Boston Public School system provided the team with data on the total number of days each student in the study was absent from school and tardy to school in the 2001-2002 school year. In analyzing rates of tardiness and absenteeism among the students in our study, we began by comparing the NFTE and Comparison students. Figure G shows that average rates of both tardiness and absenteeism are higher for NFTE students than for Comparison students. For absenteeism, the difference is not statistically significant. As Figure G shows, the gap between the NFTE and Comparison students is quite small; therefore, no conclusions should be drawn based on this observed difference. For tardiness, on the other hand, the difference is statistically significant ($p < .05$). In order to examine this difference more closely, we looked at how other variables interacted with the tardiness data.



Tardiness by School. An analysis of variance (ANOVA) was performed to determine if the difference between the NFTE and Comparison students was the same in both schools, for all teachers, for both genders, for students who are low-income (as measured by whether they participate in the free/reduced lunch program), and across all

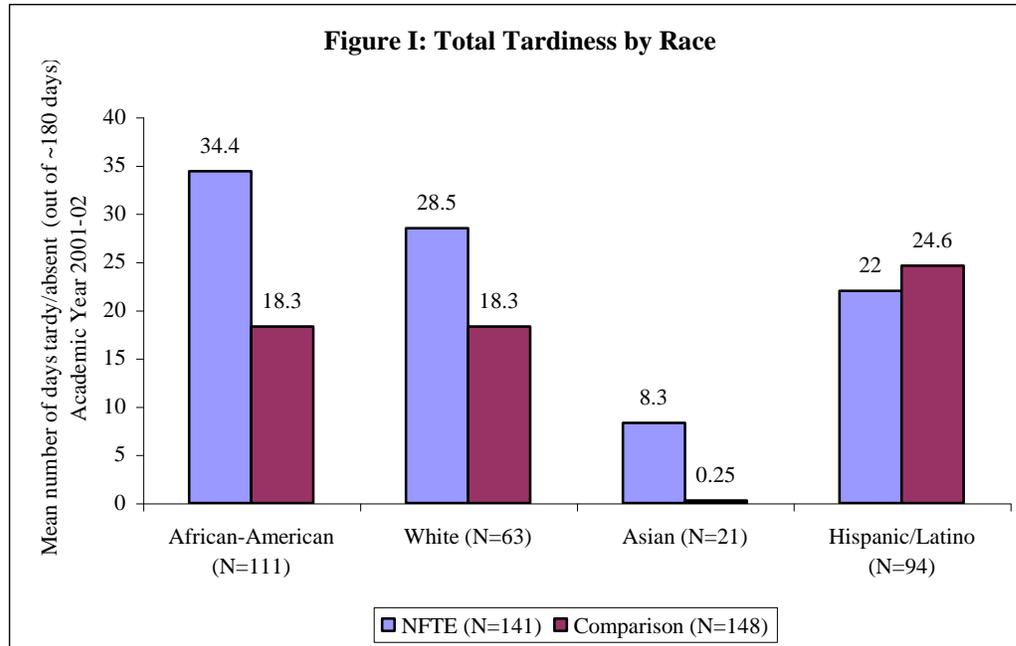
racial/ethnic groups. We found that the difference between the NFTE and Comparison students remained even when accounting for gender and income-level. In comparing schools, however, we discovered there was a significant difference between the two schools with regards to tardiness.

Figure H shows that Brighton High School reported markedly lower tardiness rates than did East Boston. It's important to note, however, that in both schools there is a difference between NFTE and Comparison students, with NFTE students coming to school late more often. Therefore, the relationship between NFTE and tardiness continues to hold true even when accounting for school differences. In addition, these findings remained even when controlling for socioeconomic status, gender, and teacher differences.



Tardiness by NFTE and Race: Further Evidence of a Latino Effect. When we examined the tardiness data across racial groups, we found a pattern of results that looks similar, in some respects, to the outcomes from the connectedness data. That is, while African American, White, and Asian NFTE students upheld the overall pattern of NFTE

students having higher rates of tardiness, Latino students in NFTE were less tardy than their counterparts (see Figure I).



Interpreting the Tardiness Data: Correlation versus Causality. In considering the above findings, it is important to recognize the difference between a correlative relationship (i.e., the students taking NFTE were tardy more often than those taking the Comparison courses) and a causal one (i.e., participation in NFTE had an impact on the students' tardiness records). It seems probable that there is a correlative relationship between NFTE and tardiness. A plausible explanation for this is that within the two schools NFTE may consist of students who are considered lower-achievers relative to the Comparison group (see next section for discussion of differences in academic achievement). Lower-achieving students generally show up to school later and are absent from school more often than students who perform well in high school. The possibility that NFTE may be serving a lower-achieving sample of students seems quite likely, given that NFTE has positioned itself as an intervention for low-achieving students. Teachers and counselors (who often suggest student electives) may feel that NFTE, since it is a program designed to help students open businesses, may be appropriate for those who are not college-bound. This interpretation is supported to a degree by the fact that the NFTE

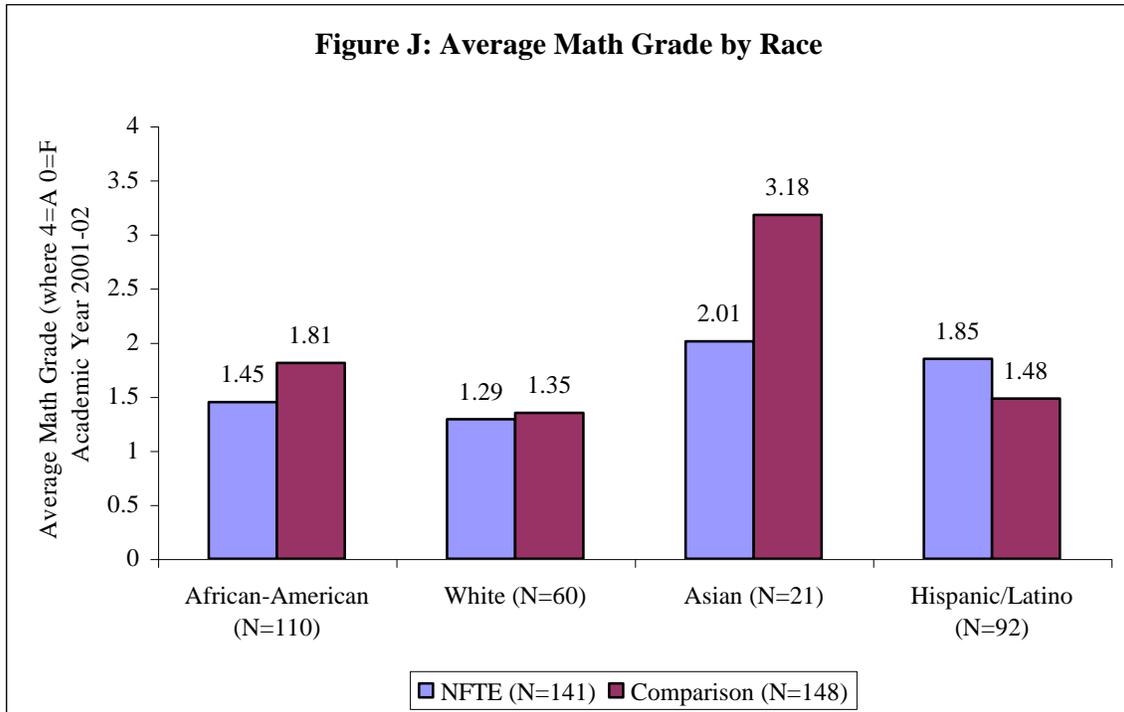
and Comparison groups were drawn from two separate pathways within Boston's School-to-Career structure. The NFTE students were participants in a "business pathway" while the Comparison students participated in a "health and human services pathway." Furthermore, at pretest and posttest, the Comparison group expressed a higher level of professional aspirations, as measured by the Across Time Orientation Measure (see Appendix C, Table 5). Finally, our data shows that a higher percentage of NFTE students receive free or reduced lunch than the Comparison students (75% versus 66%, respectively). There is a substantial body of research that shows a strong relationship between socioeconomic status and school performance, attendance, and tardiness.

Findings that suggest a possible *causal* relationship are more complex and require, at the least, that there be a change over time. Our findings do not provide us with any solid evidence that NFTE participation affects tardiness rates. Nevertheless, given the "Latino effect" tardiness finding, in which yet again the Latino NFTE students break a correlative trend, we find it instructive to hypothesize about possible causal relationships and the scenarios that would support either negative or positive causality. Negative causality would involve a scenario in which participation in NFTE leads to students showing up late to school more often. We are highly skeptical that this would occur (unless, of course, students are using their before-school time to pursue entrepreneurial activities related to or inspired by the course). When considering, however, a positive causality scenario, in which participation in NFTE leads to students arriving to school on time more often, we find a greater likelihood. Given that NFTE teaches students the importance of professionalism, perhaps certain students come to see punctuality in their present daily practice as more important. Or perhaps students who are excited about their NFTE coursework simply are more motivated to make it to school on time. (Unfortunately, we do not have data on students' attendance and tardiness for NFTE or Comparison classes specifically.) Though we cannot prove that the NFTE Latino students in our study experienced these effects, it is nonetheless intriguing to hypothesize as to why this NFTE-Latino interaction, found across several other measures, holds up with the tardiness findings. Without a more in-depth study of Latinos in NFTE, we can only speculate about possible reasons for the emergence of this consistent pattern.

Grades and Achievement

We received from the Boston school system average final grades for both NFTE and Comparison students in Math and English. Comparing the two groups, we found that there was no significant difference in either Math or English grades. The average grade in Math for NFTE students was 1.65 and the average grade in Math for the non-NFTE students was 1.68. (A 4.0 is equivalent to an A; a 3 is a B. This group is therefore doing about C minus work in Math.)

Math Grades and Racial Composition. Although as a whole the two groups are showing similar school performance, further statistical analysis revealed a statistically significant interaction ($p < .05$) between NFTE and Race such that African American, White, and Asian Comparison Group students received higher average Math grades than did the NFTE students from these racial backgrounds. But once again Latinos bucked the trend. NFTE Latino students, on average, received a higher grade in Math than their non-NFTE peers.



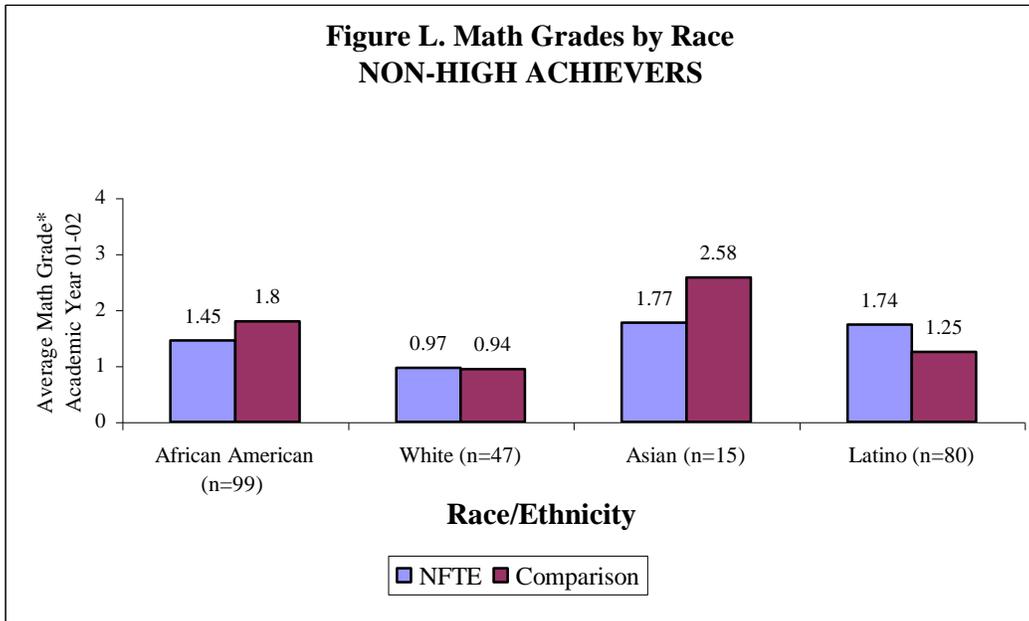
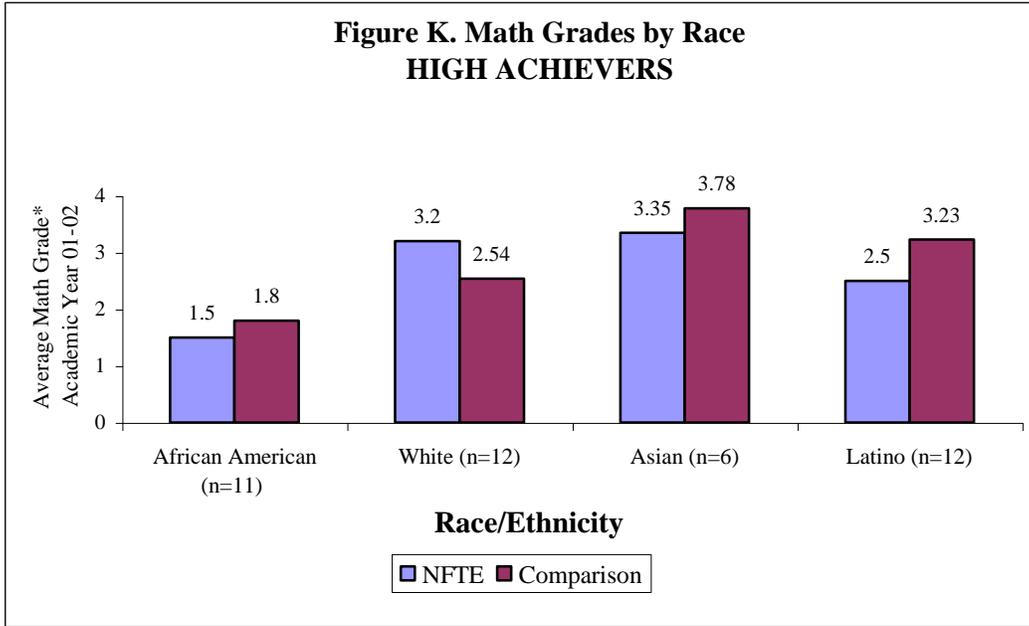
However, it is important to think critically about the grades finding, because grades are known to be subjective—they are dependent on teachers' attitudes and opinions. In addition, students are often tracked: grouped according to achievement level such as Honors, Level 1, Level 2, and so forth in key subject areas such as Math, English, Science and Social Studies. The type of Math or English class they are taking is relevant, because we would expect an A in Honors English to carry more weight than an A in Level 4 English.

To help determine how NFTE and non-NFTE students compared in regards to achievement level, we noted when students took an Advanced Placement or Honors English or Math class. As presented earlier in Table 2, we discovered 77% of the Honors English students were in the Comparison classes while only 23% of Honors English students took NFTE (by virtue of their placement in the Business Pathway). Similarly, 63% of the Honors Math students were found in the Comparison classes while 37% of the Honors Math students were placed in NFTE. Honors students either are not drawn to the business pathway and exposed to NFTE, or they are not placed there by teachers and counselors. This finding has interesting implications. Is the Business Pathway and perhaps NFTE seen by school administrators as an alternative for students who are not expected to attend college? Is it seen by students as a non-College School to Career pathway? Both questions warrant further exploration.

To explore whether placement in an advanced class influenced our findings on the relationship between NFTE participation, race (the Latino effect), and math outcomes, we conducted a more complex statistical analysis, for which we found a three-way interaction that was statistically significant ($p < .05$). Figure K presents the results for the interaction of race by NFTE participation for higher-achieving students (those taking either an advanced math or English course), and Figure L presents that same interaction for lower-achieving students (only those not taking advanced math or English courses).

For the higher-achieving students, the Comparison students received higher Math grades except for White students for whom the trend was reversed. For the lower-achieving students, the Comparison students again typically received higher Math grades than their NFTE peers; the exception in this case, though, was the Latino students. Once again, Latino students in NFTE did better than their non-NFTE peers. In summary, then,

the three-way interaction is primarily telling us that although Latino students are more likely to score better in math if they are in NFTE rather than the Comparison Group, this finding only holds for those Latino students who are not placed in high-achievement or accelerated classes.



We will discuss this complex finding more in depth in the final discussion section, when it is integrated with the other Latino findings.

The findings for math achievement were not replicated when we analyzed the English grades. While achievement level (placement in advanced classes) remains a strong predictor of English grades, as would be expected, neither NFTE nor ethnicity played a role in differentiating the outcomes. It is important to note that we have not analyzed pre to post grade data; we do not know what the students' Math or English grades were prior to beginning the NFTE program. Therefore, we cannot infer anything about the impact of changes related to Math or English grades. Nevertheless, the persistent relationship between Latinos and NFTE across many of our findings is intriguing.

DISCUSSION: IMPLICATIONS OF KEY FINDINGS

This phase of our study provided the first opportunity to examine results from the ATOM (Across Time Orientation Measure) in a comprehensive manner. We spent an inordinate amount of time refining the scoring for this instrument because we believe it holds great promise for capturing the students' experiences of NFTE in some very unique ways. By asking students to list their strongest interests and future hopes and worries in their own words, we provide an opportunity for them to tell us what is most important to them, rather than us providing the categories of importance, as is the case with most standardized surveys that simply require circling numbers related to best answers. The ATOM results stemming from our revised analysis procedure are quite striking. NFTE students show substantial growth in the general area of educational interests and professional aspirations, whereas the Comparison group did not show such growth. Why might this be the case?

We have hypothesized from the outset of our study that NFTE's greatest educational impact is likely to be in its capacity to deepen students' interests in learning. The real-world, hands-on, interactive nature of the curriculum holds the capacity to engage students in learning by making education relevant to them. The ATOM results

suggest that this impact may indeed be occurring. The dramatic shift in college interests from pre to posttest for NFTE students relative to the Comparison group implies that the program, or some other aspect of the students' school experience over the course of the academic year, is shaping the feelings of connectedness to learning. Interestingly, though, neither the ATOM nor the Hemingway Measure of Adolescent Connectedness showed increases in present school interests or in connectedness to any aspect of the school environment. The shift, then, is in future and higher-level learning. Consistent with the "non-school-related findings" is that NFTE students did show an increase in connectedness to independent reading. So increased interest in learning, but not present school-based learning, seems to have been affected by the training. A key question, only answerable through longitudinal studies, is whether such a shift in educational and professional interests will lead to subsequent improvements in academic performance.

In addition to the clear findings around educational interests and professional aspirations, our analyses found particularly strong results for Latino students in NFTE relative to other students within the program and relative to Latino students outside of the program. In particular, Latino students within NFTE were tardy less frequently than other students, including Latino students in the Comparison group. They also showed significant changes in overall connectedness following NFTE, and better math grades relative to their Latino peers outside of NFTE. It is possible, of course, that these findings are unique to the sample of Latino students within our study, and that they will not hold when the next wave of analysis is completed. However, given the strong pattern of findings for the Latino students, it seems likely that the results are rooted in more than coincidence. A potential explanation is that the Latino sub-sample may be composed of substantial numbers of immigrant students. Although our demographic data is unclear on this point, we know that a substantial percentage of the Latino students are either first or second-generation immigrants. Our review of the academic literature on immigrant achievement suggests that entrepreneurship may be particularly compelling to this group of students.

The United States is experiencing a pattern of immigration very different from previous waves in U.S. history (Portes, 1996). Most recent immigrant students and their families are nonwhite and from developing nations. They often live in multicultural urban

neighborhoods where jobs are scarce (Portes, 1996). For instance, the U.S. Census Bureau points out that although Latino children constitute 17.7% of the all children in the United States, they account for 30.4% of all children living poverty (Ramirez & G., 2002). Yet while demographics suggest Latino youth are poor, this may be offset by the fact that their parents are typically married, self-employed, and not on welfare (Portes, 1996).

Nevertheless, for the Latino population, as for other immigrant populations, the U.S. economy separates the wealthy and the non-wealthy. We believe, as do others, that education, and entrepreneurship in particular, are critical to minority and immigrant populations as an avenue for economic mobility (Rumbaut & Portes, 1996). In particular, among the recent Latino immigrants (both legal and illegal), labor-force participation is high. The majority of Latino immigrants are fully employed, often holding two or three different jobs (Cornelius, 2002).

It is important to note that there are many differences within the Latino population. For example, Latinos can be Mexican, Dominican, Columbian, etc. They may be recent immigrants, first-generation, or have lived in the United States for generations (Suárez-Orozco & Paéz, 2002). We must be sensitive to the differences between these cultures, and not broadly generalize about Latinos as a group. However, keeping these considerations in mind, it is possible that NFTE, by focusing on entrepreneurship and business, may resonate with Latino youth in particular as a pathway to success. We look forward to continuing our research on this issue with the data collected in 2002-2003.

Finally, we should note that there were substantial school differences with respect to some findings but not others. That is, the differences between NFTE and non-NFTE students related to increased interests in college and professional aspirations hold across the two schools in our study. This suggests that these important findings are robust and may hold up in subsequent waves of analysis. The same is true for the difference between the groups in connectedness to reading. With respect to the tardiness outcomes, however, there were major differences across the two schools. This suggests that school environmental factors may be strongly influencing findings that extend beyond tardiness. If students are not coming to school regularly and on time, it is difficult to influence their experience of connectedness to education through any form of curriculum. Therefore, it is

imperative that continued phases of the study include as broad a range of school environments as possible. School ecology effects can easily over-ride programming effects; therefore, a broad sampling of school environments is necessary to disentangling the relative influences of programming from the larger educational environment. As our sampling of schools increases, we expect to uncover a range of additional findings, and to determine which findings are most consistently associated with involvement in NFTE.

Table 4. Summary of Key Findings

Key Change* Findings – NFTE vs. Comparison		
	NFTE	Comparison
<i>Change in % of Students Expressing Interest in College (ATOM)</i>	↑ Increase (32 %)	↓ Decrease (-17 %)
<i>Change in Priority of College Interest (ATOM)</i>	↑ Increase (101 %)	↓ Decrease (-1 %)
<i>Change in Occupational Aspirations (ATOM)</i>	↑ Increase (44 %)	↑ Increase (10 %)
<i>Change in Connectedness to Reading (HEM)</i>	↑ Increase (4.1 %)	↓ Decrease (-3.9 %)

* change from pretest to posttest, represented in overall percentages (change divided by pretest)

Behavior/Performance Information BY RACE – NFTE vs. Comparison								
	NFTE Afr-Am	COMP Afr-Am	NFTE White	COMP White	NFTE Asian	COMP Asian	NFTE Latino	COMP Latino
<i>Tardiness (mean # of days tardy in 01-02)</i>	34.4	18.3	28.5	18.3	8.3	.25	22	24.6
<i>Average Math Grade (A=4, F=0)</i>	1.45	1.81	1.29	1.35	2.01	3.18	1.85	1.48

highlighted findings represent those that differ from overall NFTE vs. Comparison trend

Key Change* Findings BY RACE – NFTE vs. Comparison								
	NFTE Afr-Am	COMP Afr-Am	NFTE White	COMP White	NFTE Asian	COMP Asian	NFTE Latino	COMP Latino
<i>Overall Connectedness (HEM)</i>	↓ -.06	↑ .02	↓ -.18	↑ .07	↑ .17	↓ -.08	↑ .06	↓ -.24
<i>Total School Connectedness (HEM)</i>	↓ -.73	↓ -.24	↑ .01	↑ .09	↓ -.35	↓ -.43	↑ .15	↓ -1.7
<i>Connectedness to Teachers (HEM)</i>	↓ -.39	↓ -.01	↑ .06	↑ .1	0	↓ -.14	↓ -.05	↓ -1.05

* change from pretest to posttest, represented in percentage points (posttest minus pretest)

highlighted findings represent greatest spread between NFTE and Comparison

References

- Cornelius, W. A. (2002). Ambivalent reception: Mass public responses to the "new" Latino immigration to the United States. In M. Suárez-Orozco & M. Paéz, M. (Eds.), *Latinos Remaking America* (pp. 165-189). Los Angeles, California: David Rockefeller Center for Latin American Studies, Harvard University and The University of California Press.
- Hahn, A. & Leavitt, T. (1997). Evaluation of NFTE Entrepreneurship Programs: A Synthesis of Recent Research. Waltham, MA: Brandeis University, Heller Graduate School, Center for Human Resources.
- Kaufman, P., Alt, M. N., & Chapman, C. D. (2001). *Dropout rates in the United States: 2000*. Washington, D.C.: U.S. Department of Education: National Center for Education Statistics.
- Mariotti, S. (1996). *The Young Entrepreneur's Guide to Starting and Running a Business*. New York: Times Books.
- Ramirez, R. R., & G., P. d. I. C. (2002). *The Hispanic population in the United States: March 2002, Current Population Reports*. Washington D.C.: U.S. Census Bureau.
- Rumbaut, R. G., & Portes, A. (1996). *Immigrant America: A portrait* (2 ed.). Los Angeles, California: University of California Press.
- Suárez-Orozco, M. & Paéz, M. (Eds.) (2002). *Latinos Remaking America*. Los Angeles, California: David Rockefeller Center for Latin American Studies, Harvard University and The University of California Press.
- Schmidley, D. (2003). *The foreign-born population in the United States: March 2002, Current population reports*. Washington, D.C.: U.S. Census Bureau.