

Long-Term Outcomes of an Urban Farming Internship Program

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Abstract

Long-term impacts of an urban farming youth internship were evaluated in Brooklyn, New York. Alumni surveyed 1 to 9 years after program completion were enrolled in college or graduate school at higher rates than their peers and reported connections to the environment and healthy eating. Participants reported learning job skills through the internship, including farming practices, time and money management, teamwork, and public speaking. In addition, participants reported an increased sense of responsibility, high levels of self-confidence, and strong connections with their community. The amount of time spent in the internship positively affected attitudes and behaviors regarding communication and decision-making.

Keywords

community development, environmental knowledge, community gardening, social justice, job skills

Introduction

Youth in the East New York neighborhood of Brooklyn, New York, face significant challenges and risks in their environment, from poor schools and violent crime to lack of environmental amenities and larger negative societal cues (Citizen's Committee for Children of New York [CCC]; 2013). Despite these neighborhood challenges, East

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New York has a number of important community assets, including local civic organizations focused on youth, seniors, the arts, and environment, as well as access to dozens of community gardens. Since the year 2000, the East New York Farms! Project (ENYF), a program of the non-profit United Community Centers, has been running an internship program for youth ages 13 to 18 that integrates environmental stewardship and outdoor recreation by engaging youth in cultivating community gardens. The program works to create a safe, positive, challenging, and empowering context for youth interns who are motivated to improve their own academic and work skills as well as their local environment. Their work in community gardens emphasizes responsible management of shared natural resources through composting, use of cover crops, trash removal, and other actions. The ENYF program has a theory of change that the stewardship of public green space can create positive social outcomes for the community. In this study, we evaluate this theory of change by assessing whether participant outcomes reflect ENYF program goals and by contributing to the literature on long-term impacts of urban environmental education programs.

Outdoor activities and environmental education programs have been shown to have myriad physical, mental, and emotional benefits. Physical activity in the presence of nature, including walking, farming, and gardening, has been found to improve both self-esteem and mood in adults (Barton & Pretty, 2010). Documented benefits of gardening include a sense of involvement and accomplishment and the tangible benefits of producing one's own food (Kaplan, 1973; Kingsley, Townsend, & Henderson-Wilson, 2009). Community gardening in particular has also been found to support collective efficacy (Teig et al., 2009), as well as individual and community perceptions of social capital (Alaimo, Reischl, & Ober, 2010; Schmelzkopf, 1995).

Prior research has also documented the positive impacts of youth gardening and environmental education programs. Youth participation in local environmental action can lead to individual physical, intellectual, psychological, emotional, and social development as well as positive environmental and social change in communities (Schusler & Krasny, 2010; Schusler, Krasny, Peters, & Decker, 2009). In a study of youth living in public housing, a community gardening and nutrition program led not only to increased gardening and nutrition knowledge, but also to greater self-efficacy (belief in one's capability to perform a task; Grier, 2014). A similar program improved attitudes and preferences for fruits and vegetables in Los Angeles Latino youth (Gatto, Ventura, Cook, Gyllenhammer, & Davis, 2012). Underachieving students participating in a garden-based curriculum have been found to experience improvements in self-esteem and academic achievement (Sheffield, 1992). At the same time, such programs have also been critiqued for perpetuating neoliberal ideology via their focus on individual entrepreneurship rather than directly confronting the systemic inequalities that create food access disparities (Weissman, 2015).

The published literature lacks data on the long-term impacts (beyond 1 year) of such programs on career trajectories or attitudes and behaviors associated with self, community, and environment (Carleton-Hug & Hug, 2010; Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004). Evaluators must overcome substantial challenges when collecting longitudinal outcome data, including alumni residential mobility and limited

program resources. Previous research by Hung (2004) addressed the experiences of 18 ENYF internship graduates through semi-structured interviews conducted 4 to 6 months after program completion, finding that ENYF fosters the creation of participant identities through community youth development. The current study builds upon this prior work by expanding the number of participants and extending the timeline after program completion.

During the winter of 2012-2013, ENYF staff partnered with U.S. Forest Service scientists to administer the program's first alumni survey to evaluate long-term effects of participating in the internship on program participants. The goal of this evaluation was to understand whether participant outcomes reflect the goals of the East New York Farms! Youth Internship Program. Specifically, we aimed to evaluate the current education and employment status of alumni; their attitudes and behaviors surrounding food, health, and environment, communications skills, self-confidence, and community engagement; and their perceived benefits of the ENYF program. By evaluating alumni who had been out of the program from 1 to 10 years, we aimed to understand long-term characteristics of ENYF internship alumni and self-reported impacts of participation in the program, thereby contributing to the literature on long-term outcomes of urban agriculture education programs.

Method

Study Population

Youth who participate in the ENYF Youth Internship program must live or go to school within East New York zip codes. Participants are representative of the East New York community: They are Black American, Caribbean, Latino, and African. Many receive public assistance, live in single-parent households, and attend schools with below average performance ratings. Some youth are foster children, some are informally living under the care of relatives, and some have parents who are incarcerated. When selecting program participants, staff deliberately admit youth with a diversity of strengths and abilities—including both students who are high-performing in school or extracurricular activities and students who may be struggling in these areas. Overall, the focus is on admitting youth from different schools and different areas of East New York who reflect the racial and ethnic diversity of the community.

Program Overview

Using food and agriculture as a tool for learning, the ENYF Youth Internship program aims to help participants build skills and experience to better their own lives, their community, and the world around them. Specifically, the program aims to enhance rates of future employment and post-secondary school enrollment among alumni. It also aims to increase civic engagement, self-esteem, and self-efficacy in participants, as well as strengthening awareness of environmental, political, and social issues affecting their lives. To achieve these goals, program curriculum and activities address

a range of technical farming skills (e.g., composting, trellising, cover cropping, post-harvest handling), life skills (personal health, communication, collaboration, and leadership development), food systems knowledge (production and distribution, food access, global trade), and social justice topics particularly relevant to food and community development (income inequality, structural racism, diversity and inclusion, and strategies for change).

Each year, participants engage in 320 to 450 hr of training and hands-on activity in community gardens during an intensive, 9-month internship program. From March through early December, the youth participate in an integrated curriculum in which they grow food using sustainable methods both in ENYF's half-acre urban farm, and by supporting adult residents in cultivating their community and backyard gardens. Youth meet 2 to 3 times per week during the school year for 2.5 to 4 hr each session and work 20 to 25 hr per week during the summer. The program structure encourages long-term involvement: ENYF hires 21 new interns each year, and 12 "returning interns" who are in their second, third, or fourth year. A new program structure, implemented in 2004, gave returning interns more formal leadership positions with greater responsibility (leading crews of first year interns) and higher salaries.

Sustainable farming methods taught at ENYF include no use of chemical pesticides, herbicides, or fertilizers; composting; using companion planting to maximize production and minimize space; using cover crops to control weeds and boost soil fertility; and using crop rotation to maintain soil health and manage pests. Interns also collaborate with adult gardeners to run two farmers' markets that meet essential food access needs in their community, and participate in workshops and facilitated discussions to help them to understand the context of their work. The topics of these workshops and discussions include food access, global trade, gender roles, and local history of racially discriminatory urban policies and disinvestment in communities of color.

These discussions and the experience of working directly with neighbors of all ages to mobilize, develop, and steward community resources, aim to help program participants critically analyze the issues facing their community, the systemic forces that have created and perpetuated these challenges, and viable community-led solutions. The ENYF program structure seeks to develop deeply rooted self-esteem by giving participants opportunities to experience personal successes, explore and address systemic injustices, and challenge dominant narratives about distressed communities. Young people are given the chance to see their community as a place of which they are proud and to which they are committed. Further information on the specific workshops and program structures of ENYF are published in a program manual, *Growing Young Leadership in East New York* (Daftary-Steel, 2015).

Surveys

Evaluation consisted of an online and mailed questionnaire. The online questionnaire was created using Google Forms. A link or paper survey was sent out to 107 former interns who were at least 18 years old, had participated in the program for at least 3 months (to ensure exposure to the full ENYF curriculum), and had been out of the program for at

least 1 year. Ten mailed surveys were returned because of an invalid mailing address, resulting in a total of 97 alumni who had valid contact information and could have received the survey. Respondents were given either a free movie pass or a US\$15 Metrocard for participating in the survey. ENYF staff closed the survey after approximately 2 months with an overall response rate of 52% ($n = 50$). Relatively low turnover among ENYF program staff meant that alumni, who often remained living in East New York, would stop by the farmer's market to say "hi" to the staff and would be encouraged to keep coming back to see people they knew. In this way, staff members were able to informally keep in contact with internship alumni over time. This informal contact combined with more deliberate efforts by staff to keep in contact with alumni meant that staff possessed accurate contact information for most graduates of the program.

We tested for response bias by splitting the respondents into equal-sized categories of early and late respondents, per Lindner, Murphy, and Briers (2001). We found no significant differences between early and late respondents in gender or in attitude and behavior composite scores at $\alpha = .05$. For this reason, we consider our results generalizable to the sampled population: former participants in the ENYF program for whom staff had valid contact information, were at least 18 years old, had participated in the program for at least 3 months, and had been out of the program for at least 1 year.

Survey questions were developed by ENYF staff, with the goal of assessing the benefits of the youth internship program. The survey included questions about respondents' current and previous education and employment experience, their involvement in civic and leisure activities (data not presented here), and open-ended questions about their experiences and perceived benefits of going through the ENYF program. The survey concluded with four sections of 5-point symmetrical Likert-type scale questions about (a) Food, Health, and Environment; (b) Self; (c) Communication and Decision-Making; and (d) Community. The available responses for these questions included *never*, *rarely*, *every once in a while*, *sometimes*, and *often* (Table 1).

Quantitative and Qualitative Analysis

All 50 respondents fully answered all survey questions. Responses were compiled from the paper and electronic survey formats into a single Excel spreadsheet. Quantitative data were analyzed using R statistical software (R Core Team, 2015). Responses to the Likert-type questions were treated as continuous variables. Composite scores were created for four categories developed by the ENYF program staff: *Food, Health, and Environment*; *Self*; *Communication and Decision-Making*; and *Community*. Cronbach's alpha was calculated for each category, applying inter-item reduction analysis (alpha in the R psych package, R Core Team, 2015) to remove items from each scale, thereby maximizing Cronbach's alpha, a measure of inter-item reliability. Composite scores are the average of remaining items within each category. We analyzed the influence of the 2004 change in program structure and number of years in the ENYF program on these composite scores using multiple regression. Age and gender were included in the models as covariates. Statistical significance was determined at $\alpha = .05$.

Table 1. Quantitative Variables Analyzed in This Study.

Variable	Format
Gender	Binary; 0 = <i>male</i> , 1 = <i>female</i>
Race/ethnicity	Categorical (Black, Latino/a, mixed race [Black and White], Asian, mixed race [Black and Latino/a])
Number of years in ENYF internship	Treated as continuous (less than 1 year, 1 year, 2 years, 3 years, 4 years, 5 or more)
Year started	Categorical (2002-2003 or 2004-2010)
Highest level of education completed	Categorical (4-year college program, 2-year college program, high school or GED, None completed yet)
Current status (What are you doing now?)	Categorical, check all that apply (In 4-year college program full-time, working full-time, working part-time, seeking work or unemployed, in 2-year college program full-time, in 2-year college program part-time, in 4-year college program part-time, in a job training or career program, in high school)
Food, health, and environment attitudes and behaviors (eight items)	Continuous; 5-level Likert-type score (1 = <i>never</i> , 5 = <i>often</i>)
Community attitudes and behaviors (nine items)	Continuous; 5-level Likert-type score (1 = <i>never</i> , 5 = <i>often</i>)
Self attitudes and behaviors (12 items)	Continuous; 5-level Likert-type score (1 = <i>never</i> , 5 = <i>often</i>)
Decision-making attitudes and behaviors (six items)	Continuous; 5-level Likert-type score (1 = <i>never</i> , 5 = <i>often</i>)

Note. ENYF = East New York Farms; GED = General Educational Development.

Qualitative data were analyzed and coded in Excel software. As part of the survey, alumni were asked, “What did you learn by working at ENY Farms? How do you think it’s affected you?” These open-ended questions allowed respondents to give a description of their experiences and perceived benefits of working at ENYF. Responses were corrected for proper spelling and coded separately by two different researchers via an open coding scheme that identified key phrases and concepts (Lofland, Snow, Anderson, & Lofland, 2005; Miles & Huberman, 1994). These initial thematic codes were compared and discussed, and discrepancies were examined using an iterative approach until consensus was reached, thereby enhancing reliability (Neuman, 2003).

Results

Participant Background

The respondents in our alumni survey were reflective of the general population of ENYF internship participants. Respondent ages ranged from 18 to 25 with an average age of 20. Other demographic characteristics are listed in Table 2. Age range

Table 2. Participant Background Information (*n* = 50).

	Responses
Gender	
Female	29 (58%)
Male	21 (42%)
Race/ethnicity	
Black	28 (56%)
Latino/a	8 (16%)
Mixed race (Black and White)	7 (14%)
Asian	4 (8%)
Mixed race (Black and Latino/a)	3 (6%)
Number of years spent in ENYF internship	
Less than 1 year	7 (14%)
1 year	6 (12%)
2 years	10 (20%)
3 years	10 (20%)
4 years	12 (24%)
5 years or more	5 (10%)
Age	
Minimum	18
M	20.28 (± 1.90)
Maximum	25

Note. ENYF = East New York Farms.

and average age of respondents and non-respondents were comparable, although our survey response rate was higher for women than for men (59% compared with 43%). Only 20% of the survey sampling frame spent 4 years or more at ENYF, and all except two of those alumni responded. Almost all (96%) of the non-respondents were in the ENYF internship program for 1 year or less.

Education and Employment

The majority of respondents were employed and/or engaged in education: 50% were working either part-time or full-time and 64% were engaged in some type of education or training program (the survey allowed for more than one response; Table 3). Forty-eight percent of men and 76% of women in the ENYF alumni sample were enrolled in high school, college, or graduate school, which is a higher rate than the 39% of Asian, Black, and Latino young adults living in East New York who are currently enrolled in school (U.S. Census Bureau, 2013).

Sixteen percent of ENYF alumni described themselves as unemployed, but most of those respondents were also enrolled in college full-time. Only 4% of our respondents

Table 3. ENYF Alumni Education and Employment Outcomes ($n = 50$).

	Responses
Highest level of education completed	
4-year college program	6 (12%)
2-year college program	6 (12%)
High school or GED	37 (74%)
None completed yet	1 (2%)
What are you doing now? (check all that apply)	
In 4-year college program full-time	18 (36%)
Working full-time	16 (32%)
Working part-time	9 (18%)
Seeking work or unemployed	8 (16%)
In 2-year college program full-time	6 (12%)
In 2-year college program part-time	4 (8%)
In 4-year college program part-time	2 (4%)
In a job training or career program	1 (2%)
In high school	1 (2%)

Note. ENYF = East New York Farms; GED = General Educational Development.

were unemployed and not in school. In comparison, the unemployment rate for Asian, Black, and Latino young adults living in East New York is 13% (U.S. Census Bureau, 2013), and 25% of East New York youth between the ages of 16 and 24 are neither working nor going to school (commonly defined as “disconnected youth”; Measure of America, 2012). Because we did not provide the Bureau of Labor Statistics definition of unemployment on our survey (looking for jobs and available for work), we may have received positive responses from alumni who were not actively seeking employment.

ENYF alumni were also asked, “If you are in school, what is your major? If you haven’t picked a major yet, what do you think you’d like to study? If you completed a college degree or career training program, what did you study?” The most common answers were health-related fields like nursing or public health followed by business and criminal justice. The survey also asked, “If you are working, what is your job?” ENYF alumni were most likely to be working in retail, education, or health-related jobs like nursing or home health aide.

Attitudes and Behaviors: Environment, Self, Communication and Decision-Making, and Community

Table 4 summarizes the mean scores of attitude and behavior questions about Food, Health, and Environment; Self, Communication and Decision-Making; and Community. The majority of ENYF alumni reported engaging in behaviors that promote their own health or the health of the environment often, with the exception of

Table 4. Mean and standard deviation scores for Likert-type questions and composite scores about four categories of attitudes and behaviors.

Variable	M Likert-type score	SD
Food, health, and environment ($\alpha = .71$)	4.50	0.58
I grow food or garden ^a	2.68	1.45
I have a good understanding of where my food comes from	4.64	0.72
I cook	4.32	1.00
I eat fruits and vegetables ^a	4.78	0.51
I am physically active ^a	4.52	0.84
I eat fast food ^a	3.02	1.06
I care about nature and the environment	4.68	0.59
I try to find way to reduce waste (compost, reduce, reuse)	4.34	0.82
Self ($\alpha = .52$)	3.85	0.19
I am a good leader	4.76	0.52
I feel good about myself	4.92	0.27
I have a lot to be proud of	4.90	0.30
I have low self-esteem ^b	1.78	0.97
I am motivated at work	4.86	0.50
I enjoy learning new information	4.92	0.34
I am comfortable applying math and science concepts when I need them	4.48	0.74
I enjoy learning new skills	4.98	0.14
I plan for my future	4.84	0.47
I enjoy trying new things	4.90	0.36
I feel like I have a sense of purpose in life	4.88	0.39
I have confidence in my beliefs even when they are different from how other people think	4.96	0.20
Communication and decision-making ($\alpha = .69$)	4.6	0.58
I communicate well with others ^a	4.72	0.54
Peer pressure influences my decisions ^a	1.96	1.23
I consider multiple viewpoints before making a decision	4.58	0.84
I feel comfortable talking with a friend or an adult about difficult decisions	4.68	0.74
When I get upset, I feel comfortable talking it out with others ^a	3.98	1.32
I speak up or take action when I see a problem	4.58	0.61
Community ($\alpha = .78$)	4.3	0.58
I take leadership roles in my community ^a	3.40	1.36
I participate in community activities (volunteering, clubs, community gardens, church groups, etc.)	3.60	1.28

(continued)

Table 4. (continued)

Variable	M Likert-type score	SD
I feel close to my friends and peers	4.60	0.67
I feel lonely or disconnected from the people around me ^b	2.08	1.18
I feel close to the adults in my life	4.50	0.68
I feel connected to a larger community (school, church, neighborhood, community groups, etc.)	3.96	1.16
I feel comfortable interacting with people of different races, genders, and abilities	4.92	0.34
I surround myself with people who are a positive influence on me	4.88	0.39
I feel capable of making change in my community and beyond	4.52	0.91

Note. Mean and standard deviation scores for Likert-type questions and composite scores about four categories of attitudes and behaviors (1 = *never*, 2 = *rarely*, 3 = *every once in a while*, 4 = *sometimes*, 5 = *often*; responses were treated as continuous variables). Cronbach's alpha (α) is reported for each composite score.

^aExcluded from composite scores via item reduction analysis.

^bReverse correlation used.

growing food or gardening, which more than half said they never or rarely do. Close to half of those surveyed said they rarely eat fast food and only 12% reported eating it often. Interns who started the program more recently (2004-2010), after the implementation of a new program structure, had a higher Food, Health, and Environment score than those who started the program earlier (2002-2003; Table 5). The beta estimate for curriculum indicates that the 2004-2010 curriculum increases the Food, Health, and Environment score by 0.68 over the 2002-2003 curriculum. For the Self score, our regression model did not identify any program variables as significant, but gender (a control variable) was significant, with females less likely to have a higher Self score (Table 5).

ENYF alumni scored high on questions about self-esteem. Notably, half of respondents reported never having low self-esteem (Table 4). Respondents also generally reported strong communication and decision-making skills, and almost half said they never let peer pressure influence their decisions. For the Communication and Decision-Making score, our regression model identified Years in Program as an important factor, but not other variables (Table 5). A longer time in the ENYF internship program was significantly correlated with stronger composite scores for Communication and Decision-Making. The beta estimate indicates that for every year increase in Years in Program, there is a 0.24 increase in the Communication and Decision-Making score (Table 5).

When asked about their attitudes and behaviors regarding their community, over half of ENYF alumni said that they sometimes or often take community leadership roles, participate in community activities, or feel connected to a larger community

Table 5. Multiple Linear Regression Models Examining the Effects of Initial Age, Current Age, Years in the ENYF Program, and Curriculum Type (2002-2003 or 2004-2010) on Four Composite Scales of Attitudes and Behaviors.

Composite scale	Variable	Beta estimate	SE	t value	p value
Food, Health, and Environment	Intercept	2.9	1.95	1.49	.14
	Current age	0.07	0.07	0.99	.33
	Initial age	-0.03	0.06	-0.45	.66
	Years in program	0.03	0.06	0.5	.62
	Curriculum ^a	0.68	0.31	2.17	.04*
Self	Gender	-0.2	0.17	-1.16	.25
	Intercept	4.96	0.64	7.73	<.0001*
	Current age	-0.04	0.02	-1.62	.11
	Initial age	-0.02	0.02	-0.88	.39
	Years in program	0.02	0.02	0.92	.37
	Curriculum ^a	-0.13	0.1	-1.23	.23
Communication and Decision-Making	Gender	-0.16	0.06	-2.82	.007*
	Intercept	2.57	2.34	1.1	.28
	Current age	0	0.08	-0.05	.96
	Initial age	0.06	0.07	0.85	.4
	Years in program	0.24	0.07	3.3	.002*
Community	Curriculum ^a	0.3	0.37	0.8	.43
	Gender	-0.19	0.2	-0.91	.37
	Intercept	1.22	1.96	0.62	.54
	Current age	0.08	0.07	1.19	.24
	Initial age	0.07	0.06	1.23	.23
	Years in program	0.12	0.06	1.93	.06
	Curriculum ^a	0.14	0.31	1.33	.19
	Gender	0.11	0.17	0.64	.52

Note. ENYF = East New York Farms.

^aCurriculum in 2002-2003 was different from the 2004-2010 curriculum; the base case is the 2002-2003 curriculum.

p values that are significant at $\alpha = .05$ are marked with an asterisk.

(Table 4). Ninety percent reported sometimes or often feeling capable of making change in their community and beyond, showing strong confidence and self-efficacy as well as community awareness. In addition, 90% reported that they often surround themselves with people who are a positive influence. ENYF alumni also reported frequently feeling comfortable interacting with people of different races and ethnicities. Many reported often feeling close to friends, peers, and adults. Only 40% of respondents reported never feeling lonely or disconnected from the people around them; however, an additional 34% reported rarely feeling that way. For the composite Community score, our regression model identified no independent program or control variables as significant (Table 5).

Table 6. Primary Themes Coded From Responses to “What Did You Learn by Working at ENYF? How Do You Think It’s Affected You?”

Theme	% of respondents
Gardening/food	56
Communication/social skills	50
Responsibility	40
Community	30
Self-confidence	22
Diversity	20
Money management	20
Identity	18
Career	16

Note. ENYF = East New York Farms.

Qualitative Results: Learning Experiences and Perceived Benefits of ENYF

Alumni were asked, “What did you learn by working at ENYF? How do you think it’s affected you?” Nine primary themes were identified from the alumni responses and are presented in rank-order of their occurrence in Table 6. The percentages total to more than 100% because respondents often identified multiple themes.

When asked what they learned by working at ENYF, the most common response, given by 56% of alumni, was an increased knowledge of *gardening, food systems, agriculture, or the importance of eating fresh produce and healthy food*. Many respondents talked about the variety of fruits and vegetables that they learned to grow or identify. One alumna stated, “[ENYF] opened my eyes to vegetables I have never heard of, and to this day I continue to shop at farmer’s markets and buy organic foods.” In addition, respondents listed pesticide knowledge, soil preparation, and taking care of bees and chickens among their skill sets. ENYF alumni gained knowledge about sustainable agriculture, the food system, and the role of farmer’s markets, community gardens, and urban farms.

Half of the respondents described improvement in their *communication and social skills*, including public speaking and customer service. The ENYF program included valuable opportunities to share ideas with co-workers, supervisors, and peers from other backgrounds. Presenting information to customers and to the public, ENYF interns learned to “engage and inspire others.” These formal and informal presentation settings had an impact on one person’s ability to network professionally:

I was more comfortable with presentations in college and at work, as well as expressing personal views in class discussions and lectures . . . Networking became easier for example at career fairs and for the purpose of making connections in the work place and on college campus.

Another key finding was that the ENYF program helped many teens overcome shyness to take initiative or share ideas more freely. Furthermore, 20% of respondents described learning to work with *diverse* people of all ages and ethnicities as a valuable skill gained during the ENYF internship. Alumni felt that these experiences made them more “mature,” “well-rounded,” “open to diversity,” and “a better person.” The ENYF program also inspired greater *community awareness* in alumni, with 30% of respondents reporting greater awareness of social, environmental, and food justice issues, as well as an increased desire to help others and participate in “local community activism.” One respondent remarked, “As a group of youth we have the ability to make a huge impact in our communities.”

Forty percent of alumni described a greater sense of *responsibility* or work ethic as a result of participation in ENYF. Specific skills cited included time management, efficient execution of multiple tasks, and workplace leadership. According to one respondent, “We had deadlines to meet, orders to fulfill, customers to take care of.” In a related theme, 22% of alumni reported that their time at ENYF increased their *self-confidence* or *self-efficacy*. This was due to greater communication skills, leadership abilities, or increased community awareness. One person stated, “I learned what it was like to be independent and successful at a young age and that if you work hard you achieve great things.” Math and *money management* skills were also specifically identified by 20% of alumni, some of whom were working their first job at ENYF.

Although many of these themes highlight skills important for a successful career, we found explicit references to future *career* opportunities in 16% of responses. For example,

East New York Farms gave me opportunity. That’s the one thing I appreciate about the program. I didn’t know of any other program that explicitly did food justice work and taught many soft and hard job skills. The experience is something that gave me an advantage to participate in other professions.

Similarly, 18% of alumni described the ways in which their core values or *identity* were influenced by their experiences at ENYF. These respondents felt that the program “made me who I am today” or “helped mold me” or influenced “how I go about perceiving life.”

Discussion

Attitudes and behaviors surrounding health, environment, self, and community were generally positive, as were alumni perceptions of their experience at ENYF. Drawing from the open-ended responses and the high scores for eating fruits and vegetables, it appears that the ENYF program is contributing to an increased knowledge of fresh produce and a preference for the taste of these fruits and vegetables. The healthy behaviors and environmental concern reported by ENYF alumni are unexpected for their age group. Adolescents (and teenage girls in particular) generally fail to meet the recommended daily allowances for the major food groups, leading to diets low in

fruits and vegetables and high in fat (Muñoz, Krebs-Smith, Ballard-Barbash, & Cleveland, 1997; Story, Neumark-Sztainer, & French, 2002; see also Croll, Neumark-Sztainer, & Story, 2001; Neumark-Sztainer, Wall, Perry, & Story, 2003). Despite their overwhelmingly positive response to most healthy behaviors, more than half of ENYF alumni reported never or rarely gardening. It is unclear whether a lack of interest, time, or opportunity prevents alumni from continuing to garden. Although ENYF alumni may not continue the practice of growing their own food, they still practice healthy behaviors and report a good understanding of where their food comes from. Nationally, adolescents' environmental concerns have declined since the 1970s, including conservation behaviors, belief in resource scarcity, and personal environmental responsibility (Wray-Lake, Flanagan, & Osgood, 2010). However, most ENYF alumni reported caring about the environment and trying to find ways to reduce waste.

The new internship program structure implemented in 2004 significantly increased the composite Food, Health, and Environment score in this alumni evaluation. The new system gave returning interns more formal leadership positions with greater responsibility (leading crews of first year interns) and higher salaries. This relationship between peers may have provided more effective education than the original program format. Research has found peer-led nutrition education to be positively received by teachers, peer leaders, and other students (Story, Lytle, Birnbaum, & Perry, 2002), which may explain the high scores of alumni on questions about food and health knowledge and behaviors.

ENYF alumni reported often feeling proud, confident, motivated, and purposeful, and attributed these attitudes to their internship experience. These findings are similar to those found in a study of young adult participants in a New York City green jobs training program, who reported a strong sense of self-efficacy as well as positive environmental attitudes and behaviors as a result of their urban greening job training and employment (Falxa-Raymond, Svendsen, & Campbell, 2013). Similar themes are also found by Feenstra (2002) in her work on sustainable community agriculture:

Community food systems projects offer [disenfranchised groups] real opportunities to develop leadership from among their ranks . . . Young people are learning to grow, harvest, and process food for their communities at the same time as they learn business and marketing skills, community outreach, and nutrition/health education skills, and they learn about the strength inherent in their own and their community's unique assets. (p. 105)

The ability to learn unique and valuable physical job skills in the context of one's own community contributes to the positive impact of urban environmental training programs. It is important to document the long-term effect on program alumni, who in this case credited their experience at ENYF with increases in overall confidence, communication skills, and self-efficacy in particular areas such as math or money management. Though it is not specifically structured as a workforce development program, the importance of ENYF in career preparation is apparent in alumni descriptions of agricultural and business skills learned, as well as in the discussions of responsibility,

maturity, work ethic, time management, and communication skills. Because we did not evaluate program participants before entry into the ENYF program, we can only correlate their participation with these positive attitudes and skills. It is possible that the ENYF internship provides a setting in which students with existing communication and leadership skills can further develop these qualities as they mature.

Consistent with the literature, participation in ENYF affected alumni attitudes and behaviors about community and themselves. Community-based organizations in Black communities help Black youth build the social capital needed to transform community conditions (Ginwright, 2007). Rather than uncritically reinforcing neoliberal ideologies about the importance of individual knowledge and economic enterprise (Weissman, 2015), the ENYF program teaches participants to analyze systemic inequalities in their communities. ENYF alumni also reported often feeling comfortable interacting with people of different races and ethnicities, supporting previous findings that community gardens have been viewed as sites of interracial interaction that may improve racial attitudes and tolerance (Shinew, Glover, & Parry, 2004). In addition, community gardens have been found to cultivate democracy (Baker, 2004; Glover, Shinew, & Parry, 2005), and garden involvement increases individual and neighborhood-wide perceptions of social capital and engenders the feeling that one is part of the community (Alaimo et al., 2010; Schmelzkopf, 1995). These themes are also reflected in the open-ended responses, where alumni reported greater community awareness and greater comfort interacting with people of other ages and ethnicities.

ENYF alumni also reported often feeling close to friends, peers, and adults. Adolescent friendships provide important intimacy and companionship (Lempers & Clark-Lempers, 1992). Teig et al. (2009) found that community gardening supports collective efficacy through multiple mechanisms, including the encouragement of social connections, mutual trust, collective decision-making, social norms, civic engagement, and community-building. The youth at ENYF appear to have experienced all of these social processes throughout their internship.

Despite the challenges of reaching out to young adults who were no longer active ENYF program participants, we received a 52% response rate for this evaluation, and the open-ended responses revealed that many were eager to be back in touch with ENYF. Our sample size is small compared with the entire community of young adults in East New York, limiting our capacity for rigorous analysis comparing the populations. However, the evaluation results do reveal relatively high rates of school enrollment and low rates of unemployment in ENYF alumni compared with East New York young adults.

Previous research by Hung (2004) on 18 youth graduates from the ENYF internship program (including some who filled out our survey as well) revealed themes similar to those found in this evaluation. Four to six months after program completion, respondents reported feeling useful and responsible in their internship, as well as having gained job and interpersonal skills. They also spoke about the importance of their role in helping the community and improving the neighborhood. Therefore, an important contribution of our evaluation is that varied methods and a much longer time frame provide similar conclusions about the efficacy of the ENYF internship program.

Our alumni evaluation reveals that the ENYF internship program is meeting its goals for the underserved minority youth who participate in terms of educational attainment, environmental knowledge, job skills, community engagement, and self-esteem. The number of years spent in the program was found to have a significant effect on composite Communication and Decision-Making scores, supporting the ENYF program model of including new and returning interns in each year's class. These skills may strengthen over time as the interns are exposed to more opportunities to work collaboratively, communicating with each other and the broader community. It is possible that the interns who chose to return to ENYF for many years and who kept in touch with the program staff (resulting in valid contact information) already had stronger communications skills and community awareness and would have scored highly to begin with. Pre-post evaluations, coupled with data on youth retention in the program, would provide stronger validation of the effect of multiple years of the ENYF program on participants. However, alumni evaluations such as the one presented here reveal the self-reported long-term impacts of a youth urban farming internship and its effects on higher education, career development, and attitudes and behaviors developed and sustained over many years of young adulthood.

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