Training among young adults: who, what kind, and for how long?

Data from the National Longitudinal Survey of Youth show that 38 percent of young adults received training during 1986–91; whites and men were more likely to receive company training, while nonwhites and women were more highly represented in off-the-job training programs

Jonathan R. Veum

Changes in productivity are often attributed to investment in education and training. Consequently, improvements in the quality of the American work force through enhanced education and training are often deemed necessary for the United States to compete in the global market. Training received by young men and women is particularly important, given that those in their early years in the labor market tend to make numerous job changes. On average, during their first 10 years in the labor force, individuals work for approximately eight employers.[1] Because changes in the structure of the economy appear to have increased the demand for highly skilled workers, training may play an important role in enhancing the skills, productivity, and wages of young adults.[2]

Research into the acquisition of training and the time spent in training programs is extremely limited, basically because there is a lack of comprehensive data on actual investment in training. Collecting data on training is complicated by the fact that training is in many ways a difficult concept to measure and quantify, as workers can receive training informally through methods such as observing coworkers, learning by doing, and speaking with supervisors.

Most previous research on training has focused primarily on government training programs and training received from the current employer.[3] For the most part, the data used in these studies provide only crude measures of the incidence and duration of training, and the samples used are often not nationally representative.

This article presents information on the acquisition of training, using data from the National Longitudinal Survey of Youth. These data describe a sample of young men and women who were between the ages of 14 and 22 in 1979 and who have been interviewed annually since that year. In 1991, the sample, which includes an overrepresentation of blacks and Hispanics, had 9,018 respondents. In all computations, weights are used to adjust for different sampling rates and nonresponse rates, so that the data are nationally representative of the age cohort.[4]

The National Longitudinal Survey of Youth contains some of the most comprehensive data currently available on training. Between 1979 and 1986, the survey collected information about the occurrence and duration of all government-sponsored training programs and all privately supported training that lasted at least 4 weeks. In subsequent years, the questions on training were changed so that respondents were asked about all types of training (up to four programs) since the last interview, regardless of duration. Potential sources of training include business schools, vocational and technical institutes, correspondence courses, apprenticeships, company training, and seminars outside of work.[5] All of these exclude any training received through formal schooling.

Jonathan R. Veum is an economist in the Office of Economic Research, Bureau of Labor Statistics.

Also, none of them captures the full extent of informal training an individual may have received.

This analysis of young workers examines data on training from 1986 to 1991, a period in which the age range of the sample changed from 21–29 to 26–34. The age range is crucial, because past research indicates that most formal employer-based training is provided to workers between the ages of 25 and 34.[6] The discussion focuses on who received training, as well as the duration of training, measured in weeks, and the intensity of training, measured in hours per week. A comprehensive measure of total hours of training over the period is also provided.

Sources of training

The sources of training mentioned above exclude training received from community and junior colleges, as well as training received directly from the military, which accounts for the largest share of government expenditures on training.[7] Despite these limitations, the data allow for an analysis of a wider range of programs than any other source. In previous research, training, defined by participation in a government training program or by training received from the current employer, has usually been treated as a homogeneous good. By contrast, the various types of training analyzed in this article include heterogenous forms received both on and off the job. These forms of training are important, because companies often choose to train only those workers who are most likely to generate returns to the firm. Workers not chosen by the company, but who still desire training, may obtain it on their own through other sources.

Different types of off-the-job training can provide skills for different types of occupations. For instance, business schools generally offer training for those interested in accounting, computer programming, and other business-related areas. Vocational and technical schools provide skills to individuals seeking training to become, among other things, mechanics and repairmen, technicians, machinists, welders, carpenters, electricians, and truckdrivers. Correspondence courses and seminars outside of work both offer training for a wide variety of occupations.

Apprenticeship programs probably combine both classroom instruction and on-the-job training to a greater extent than any other form of training. Under the National Apprenticeship Act of 1937, employers, groups of employers, and unions determine the requirements of and finance the training in apprenticeship programs, although the Bureau of Apprenticeship and Training is responsible for establishing the framework of basic standards. Apprenticeships are most common in the carpentry, electrical, and pipe trades.[8]

Who receives training?

Table 1 indicates that 38 percent of young adults received some form of training over the 1986–91 period. Nearly 24 percent of the sample received company training, the leading source of training. Approximately 1 of 10 individuals participated in seminars outside of work, while about 1 of 20 attended a vocational or technical institute. Participation in business schools, correspondence courses, and apprenticeships each accounted for less than 2 percent of the training of the cohort.

The table gives figures on the receipt of training by a variety of individual characteristics: sex, race and ethnicity, educational attainment, and score on the Armed Forces Qualifying Test, which is used as a measure of aptitude. The score on this test is derived from selected sections of the Armed Services Vocational Aptitude Test and ranges in value from 0 to 105. The score is considered a measure of trainability and is a primary criterion of eligibility for enlistment in the Armed Forces.

There were very few differences between men and women in the overall likelihood of receiving training, but there were some differences by gender across the different types of training programs.[9] Men were more likely than women to receive employer-provided training and to participate in apprenticeships. Part of the gender differential in the receipt of company training may reflect the fact that men are more strongly attached to the labor force than are women. Previous research suggests that the probability of receiving training is fairly similar among men and women who are strongly attached to the labor force.[10] The data also indicate that women were more likely than men to participate in many of the off-the-job forms of training, such as business schools, vocational or technical institutes, and seminars outside of work.

Whites were more likely to receive training than were blacks or Hispanics, primarily because whites were more likely to receive company training and to participate in seminars outside of work.[11] Blacks and Hispanics were more likely than whites to attend business schools and vocational or technical institutes.

The likelihood of receiving training increased with education and score on the Armed Forces Qualifying Test. These results are driven primarily by a positive association of both education and aptitude with the receipt of company training and training received from seminars outside of work. The other forms of training exhibit no clear pattern by education or score on the Armed Forces Qualifying Test. The findings for company training are particularly important, given the notion that employers tend to train their "best" workers and, consequently, many workers who could benefit from training may not in fact receive it. Apparently,

Table 1. **Percent of individuals aged 21–29 in 1986 who received training, 1986–91**

Characteristic	Source of training							
	Any training	Business training	Vocational and technical institutes	Correspondence courses	Apprenticeships	Company training	Seminars outside of work	Other
All persons	38.0	1.6	4.8	1.9	1.5	23.7	11.0	4.5
Sex:								
Male	38.9	1.3	4.4	2.1	2.4	25.5	10.5	4.4
Female	37.1	2.0	5.2	1.8	.6	21.9	11.5	4.7
Race or ethnicity:								
White	39.1	1.3	4.4	2.0	1.5	24.9	12.3	4.5
Black	34.8	3.1	7.2	1.9	1.8	19.5	5.6	4.2
Hispanic	33.0	2.9	5.0	1.7	1.2	17.8	7.1	5.0
Education:								
Less than high school	18.9	.9	4.6	1.0	1.0	8.7	2.2	4.0
High school graduate	33.5	2.0	6.1	1.6	1.7	19.4	7.4	4.6
Some college	44.5	1.8	5.2	2.0	1.8	28.0	13.2	4.9
College graduate	50.1	1.2	2.0	2.9	.9	35.3	21.8	4.2
Armed Forces Qualifying Test score:								
Less than 50	21.5	1.9	4.8	1.3	1.1	9.2	2.4	4.8
Greater than or equal to 50, but less than 65	35.3	2.1	8.0	2.0	1.9	19.7	7.8	2.9
Greater than or equal to 65, but less than 80	38.3	1.9	5.0	1.9	2.0	24.3	9.4	5.2
Greater than or equal to 80	46.6	1.1	3.3	2.2	1.2	31.7	17.4	4.7

NOTE: Percentages may add to more than 100 because some individuals received training from more than one source.

SOURCE: National Longitudinal Survey of Youth.

firms provide training mostly to the highly educated and those with high aptitudes.

Overall, the data suggest that while employer-provided training is the most common form of training received by young adults, training received from institutions outside of the workplace plays an important role for those who are less likely to receive company training. Whites and males are more likely to receive employer-provided training than others. Conversely, nonwhites and females are more highly represented in off-the-job training programs.[12]

Duration of training

Table 2 gives the average number of weeks spent in various training programs by training recipients. Between 1986 and 1991, young adults who participated in a training program spent about 12 weeks in training. Those who participated in apprenticeship programs experienced training durations of about 24 weeks, longer than any other form of training. In contrast, individuals who attended seminars outside of work spent only about 5 weeks in these programs. Those who received company training also spent a relatively short time (about 7 weeks) in the programs.

The data in table 2 indicate that male training recipients averaged about 2 more weeks in training than did female training recipients, primarily because men spent a little over 2 weeks more in company training than did women. Again, this gender differential may reflect the fact that men tend to work more weeks than women do and, consequently, have more opportunities to spend time in company training. The data indicate that women spent more weeks than men did in off-the-job forms of training, such as business schools and vocational schools.

Among training recipients, blacks spent more weeks in training than did either whites or Hispanics, primarily because they averaged more weeks in company training and business schools than did whites and Hispanics. Hispanics averaged more weeks in vocational and technical institutes than the other groups did.

The number of weeks spent in training exhibits no clear patterns by either education or score on the Armed Forces Qualifying Test. However, the number of weeks spent in business schools appears to be inversely related to the score on the test, whereas the number of weeks spent in apprenticeships appears to be positively associated with the score on the test. Also, individuals with a score greater than or equal to 80 on the Armed Forces Qualifying Test averaged more weeks in company training than did other training recipients.

Intensity of training

Table 3 shows the average number of hours per week devoted to training among training recipi-

Table 2. **Average numbers of weeks spent in training, 1986–91, among individuals ages 21–29 in 1986 who received training**

Characteristic	Source of training							
	Any training	Business training	Vocational and technical institutes	Correspondence courses	Apprenticeships	Company training	Seminars outside of work	Other
All persons	12.2	17.7	19.6	13.5	23.7	7.1	4.8	12.7
Sex:								
Male	13.3	12.6	18.5	15.9	24.0	8.2	5.5	13.6
Female	11.1	21.0	20.5	10.6	22.4	5.9	4.1	12.0
Race or ethnicity:								
White	11.6	14.9	19.1	13.5	24.0	7.0	4.8	11.9
Black	16.2	23.9	19.1	15.0	24.2	8.2	4.8	19.6
Hispanic	12.7	19.0	26.1	9.3	16.7	6.8	4.4	9.3
Education:								
Less than high school	12.8	15.8	15.4	7.7	14.8	6.2	4.4	18.3
High school graduate	13.2	17.9	20.0	14.1	24.0	6.3	4.6	13.7
Some college	12.7	23.7	24.0	22.4	18.9	7.8	3.6	9.8
College graduate	10.5	9.3	10.4	8.1	12.8	7.6	5.6	11.4
Armed Forces Qualifying Test score:								
Less than 50	15.5	24.4	17.1	22.5	12.6	6.6	5.2	17.7
Greater than or equal to 50, but less than 65	12.2	19.3	19.0	12.1	13.5	6.1	2.7	16.2
Greater than or equal to 65, but less than 80	12.6	18.0	22.1	13.6	26.3	6.3	6.1	10.2
Greater than or equal to 80	11.4	11.0	19.4	11.6	32.4	7.9	4.7	11.2

SOURCE: National Longitudinal Survey of Youth.

ents. Young adults spent about 21 hours per week in training during the weeks they received it. Participants in apprenticeship programs experienced the most intense form of training, averaging about 27 hours per week. In contrast, individuals who attended business schools experienced the least intense form of training, averaging fewer than 15 hours per week. There was little variation in intensity among the other forms of training.

The table provides figures on the typical number of hours per week participants spent in training programs, by individual characteristics. The average intensity of training was higher for males than for females. This disparity is fairly consistent across the sources of training, there being no form of training in which average hours per week spent in training was higher for females than for males.

There is very little variation in intensity of training by race, education, or score on the Armed Forces Qualifying Test. However, the data indicate that college graduates and those who scored in the highest test category averaged fewer hours per week in business schools and vocational or technical institutes than did others. Also, high school dropouts averaged the most hours per week in correspondence courses.

Total hours in training

It is possible to create a measure of total hours spent in each type of training by taking the product of the separate questions about the number of weeks of training and the number of hours per week of training.[13] Table 4 provides information on the total hours spent in training among those who received it. Because of the small differences in training intensity, most of the differences in average total hours in training mirror the differences in weeks spent in training. Young adults who received any training spent about 264 hours in training programs. Individuals who participated in apprenticeship programs spent the most hours in training, averaging nearly 700 hours in this form of training over the 1986–91 period. Recipients of training from vocational or technical institutes spent the second highest number of hours in training, averaging about 425 hours in those institutions. Participants in seminars outside of work averaged about 64 hours in such seminars, fewer than the number of hours spent in any of the other forms of training.

The data in table 4 indicate that there is substantial variation by gender in total hours of training. Male training recipients spent about 3 hours in training for every 2 spent in training by female training recipients. In particular, men spent about twice as much time in company training than did women, whereas women spent more time in business schools, vocational and technical institutes, and apprenticeship programs than did men. The figures for apprenticeship programs are interesting in light of the fact that only

a very small fraction of women participated in such programs. (See table 1.) Among women who did, the number of hours they spent in the program was substantial.

Similar to the differences in the number of weeks spent in training, the number of hours spent in training was greater for blacks than for whites and Hispanics. In particular, blacks aver-

Table 3. **Average number of hours per week spent in training, 1986–91, among individuals aged 21–29 in 1986 who received training**

Characteristic	Source of training							
	Any training	Business training	Vocational and technical institutes	Corre-spondence courses	Apprentice-ships	Company training	Seminars outside of work	Other
All persons	21.2	14.6	18.5	18.5	27.4	22.7	19.0	19.0
Sex:								
Male	24.5	17.1	19.7	21.9	27.9	26.0	22.5	22.0
Female	17.6	13.0	17.4	14.5	25.4	18.7	15.8	15.9
Race or ethnicity:								
White	21.0	12.4	17.9	18.7	28.1	22.4	19.1	18.5
Black	22.4	18.2	20.4	18.9	24.5	24.1	18.5	22.0
Hispanic	21.3	19.9	18.8	14.4	27.0	23.5	17.8	18.4
Education:								
Less than high school	21.0	15.9	20.3	34.0	30.7	20.8	17.1	21.8
High school graduate	20.3	14.4	19.2	17.1	24.6	22.1	17.4	17.2
Some college	22.4	18.1	18.5	15.9	32.4	24.3	18.3	19.7
College graduate	21.3	10.3	12.1	19.0	26.1	22.2	20.7	20.6
Armed Forces Qualifying Test Score:								
Less than 50	20.8	17.8	20.7	15.1	29.0	22.4	17.6	20.1
Greater than or equal to 50, but less than 65	20.1	15.3	18.3	22.2	19.8	22.3	15.7	17.3
Greater than or equal to 65, but less than 80	21.6	14.0	21.1	21.8	27.8	22.9	16.7	20.0
Greater than or equal to 80	21.2	12.5	14.7	16.5	31.4	22.7	20.5	18.1

SOURCE: National Longitudinal Survey of Youth.

Table 4. **Average total hours spent in training, 1986–91, among individuals aged 21–29 in 1986 who received training**

Characteristic	Source of training							
	Any training	Business training	Vocational and technical institutes	Corre-spondence courses	Apprentice-ships	Company training	Seminars outside of work	Other
All persons	263.9	302.5	425.4	185.8	690.3	180.2	64.1	252.4
Sex:								
Male	319.3	221.4	396.0	231.0	624.9	241.6	87.1	304.8
Female	204.6	354.2	451.1	131.1	790.8	107.4	42.6	202.1
Race or ethnicity:								
White	247.6	223.6	413.4	190.5	716.0	174.8	64.1	228.5
Black	364.7	447.1	419.4	188.7	659.5	219.1	63.3	440.5
Hispanic	269.5	327.2	577.6	108.2	388.1	177.6	64.3	166.6
Education:								
Less than high school	277.7	347.8	317.8	143.9	422.4	99.9	69.8	483.7
High school graduate	277.1	279.8	444.8	210.0	644.9	156.9	57.9	233.7
Some college	282.3	462.0	534.4	293.8	571.5	185.6	45.1	187.0
College graduate	228.5	128.0	156.1	96.3	935.5	195.3	79.8	255.3
Armed Forces Qualifying Test Score:								
Less than 50	311.3	403.5	355.7	166.9	344.9	162.8	79.5	396.1
Greater than or equal to 50, but less than 65	255.2	368.1	412.5	215.3	254.4	145.3	34.9	310.1
Greater than or equal to 65, but less than 80	310.2	319.3	563.2	298.0	865.5	178.5	65.4	207.4
Greater than or equal to 80	233.4	154.9	360.5	122.9	844.8	192.4	68.1	199.3

SOURCE: National Longitudinal Survey of Youth.

aged more hours in company training and business schools than did whites or Hispanics. Hispanics averaged the most hours spent in vocational or technical institutes and the fewest in apprenticeships.

There is no pattern in total hours spent in training by educational level or score on the Armed Forces Qualifying Test. However, time spent in company training appears to be positively associated with education. There is no consistent relationship between the score on the Armed Forces Qualifying Test and the number of hours spent in company training. However, those with test scores greater than or equal to 65 spent more time in company training than did others.

Summary

Currently, little is known about who receives training and the extent of training that is received by those who do receive it. This information gap exists primarily because there is a lack of comprehensive and representative data on actual investment in training. In this article, data from the National Longitudinal Survey of Youth are used to examine who acquires different types of training, as well as the duration, intensity, and total hours spent in training by recipients of different forms of training. Sources of training include business schools, apprenticeships, vocational and technical institutes, correspondence courses, company training, and seminars outside of work.

Thirty-eight percent of young adults received some form of training over the 1986–91 period. Those who received training spent about 12 weeks, 21 hours per week, and 264 total hours in training. Employer-provided training is the most common form of training, with nearly 24 percent of the cohort receiving this form of training. Recipients of company training are more likely to be white, be male, and have a higher education and aptitude (as measured by the score on the Armed Forces Qualifying Test) than are those who did not receive company training. Nonwhites and women are more likely to seek training off the job.

While few clear patterns emerge in the duration, intensity, and total hours spent in training by individual characteristics, two that do are as follows. First, male recipients of training receive more training than do female recipients of training, on account of both the longer duration and the higher intensity of training men receive. However, part of this gender differential may reflect the fact that men spend more time working than women do and, as a result, have more opportunities to receive employer-provided training.

Second, while blacks are less likely to receive training than whites are, black training recipients get more hours of training than whites or Hispanics who receive training, primarily because the average number of hours per week of training is longer for blacks than for the others. In particular, black training recipients acquire more hours of company training and training from business schools than do whites or Hispanics. □

Footnotes

[1] See *Work and Family: Jobs Held and Weeks Worked by Young Adults*, Report 827 (Bureau of Labor Statistics, August 1992).

[2] For an examination of the increase in demand for skilled workers, see Lawrence F. Katz and Kevin M. Murphy, "Changes in Relative Wages, 1963–1987: Supply and Demand Factors," *Quarterly Journal of Economics*, Vol. 107, No. 1, 1992, pp. 35–78.

[3] See summaries of the literature by Burt S. Barnow, "The Impact of CETA Programs on Earnings," *Journal of Human Resources*, Vol. 22, No. 2, 1987, pp. 157–93; and Charles Brown, "Empirical Evidence on Private Sector Training," in *Investing in People*, Vol. I (Washington, Commission on Workforce Quality and Labor Market Efficiency, 1989).

[4] The sample is restricted to those interviewed in 1991, and the 1991 sample weight is used.

[5] Vocational rehabilitation centers are also a potential source of training specified in the survey. However, because the number of individuals who took this form of training was extremely small, it is included in the "other" category.

[6] See Anthony P. Carnevale and Leila J. Gainer, *The Learning Enterprise* (Washington, Employment and Training Adminstration, 1986).

[7] Carnevale and Gainer, *The Learning Enterprise*.

[8] *Ibid.*

[9] All inferences drawn in the text are statistically significant at the 90-percent confidence level. Standard errors are available from the author upon request.

[10] See *Work and Family: Employer-Provided Training among Young Adults*, Report 838 (Bureau of Labor Statistics, February 1993).

[11] These groups are mutually exclusive. That is, the Hispanic category includes those blacks and whites who categorize themselves as Hispanic and who, therefore, are not included among blacks or whites.

[12] Similar gender and race differentials in the receipt of on- and off-the-job training are found in Lisa Lynch, "The Impacts of Private Sector Training on Race and Gender Wage Differentials and the Career Patterns of Young Workers," National Longitudinal Surveys Discussion Paper No. 8 (Bureau of Labor Statistics, 1991); and Michael R. Pergamit and Janice Shack-Marquez, "Earnings and Different Types of Training," Working Paper No. 165 (Bureau of Labor Statistics, 1987).

[13] Average total hours are calculated by taking the product of the number of weeks and the number of hours per week and computing the mean. Average total hours do not necessarily equal the product of the average number of weeks and the average number of hours per week.