Teen Worker Safety Training: Methods Used, Lessons Taught, and Time Spent

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Abstract

Safety training is strongly endorsed as one way to prevent teens from performing dangerous tasks at work. The objective of this mixed methods study was to characterize the safety training that teenagers receive on the job. From 2010 through 2012, focus groups and a cross-sectional survey were conducted with working teens. The top methods of safety training reported were safety videos (42 percent) and safety lectures (25 percent). The top lessons reported by teens were "how to do my job" and "ways to spot hazards." Males, who were more likely to do dangerous tasks, received less safety training than females. Although most teens are getting safety training, it is inadequate. Lessons addressing safety behaviors are missing, training methods used are minimal, and the time spent is insignificant. More research is needed to understand what training methods and lessons should be used, and the appropriate safety training length for effectively preventing injury in working teens. In addition, more research evaluating the impact of high-quality safety training compared to poor safety training is needed to determine the best training programs for teens.

Keywords

safety training, working teens, methods of training, safety lessons

Introduction

Young workers represent a vulnerable population that is disproportionately at risk for workplace injury. The National Institute for Occupational Safety and

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Health reports that every nine minutes a teen worker is injured on the job.[1] Multiple research studies have determined prevalences of injury ranging from 11 percent to over 40 percent, based on the selected population, age, race, and job characteristics.[2–19] One consistent finding is that males engage in riskier work activities and are injured more than females.[12,17,20–24] Runyan et al.[20] found that males were more likely to lift objects weighing more than fifty pounds; work at heights of more than six feet without fall protection; work with sharps; use grills, ovens, and fat fryers; and perform manual tasks. Focusing on agricultural work, Reed et al.[24] found that males were more likely to work in dustier jobs and noisier jobs and to perform jobs that included driving tractors. In nonagricultural work settings, Runyan et al.[21] found that a higher proportion of males reported exposures to chemical, noise, and biologic exposures. In a statewide study of more than 8000 youth, Zierold and Anderson[12] found that males were significantly more likely to be injured, to perform dangerous tasks, to be severely injured, and to file for workers' compensation.

Multiple factors contribute to safety and health of teens in the workplace, including adhering to labor laws, a positive workplace safety climate, adult supervision, and safety training. Safety training is promoted as a key tool in injury prevention, but researchers and occupational safety and health organizations have inadequate understanding about the safety training experiences of teen workers. Most studies have evaluated safety training as an overall variable, with limited characterization of the training methods used, the lessons taught, and the time spent on training.

Studies on working teens report that between 55 and 89 percent report getting safety training at work; however, results from focus group discussions have implied that teen workers may not understand the difference between "job training" and "safety training."[12,18,25–28] Only a few studies have reported more than simply the prevalence of training, and those few are limited in specific detail or are focused on a single industry.[12,18,20,29] Runyan et al.[20] surveyed 866 working teens, of whom 66 percent reported that they received safety training. The survey consisted of seven questions to assess what was learned in safety training such as: "how to avoid getting hurt," "how to use equipment safely," "what to do in case of a robbery," and multiple questions related to threatening situations. For a study assessing the role of work permits among teen workers, Delp et al.[18] surveyed 181 working teens and found that 59 percent received some training on safe work practices including the use of machines or chemicals and safe lifting practices. In contrast, only 26 percent reported receiving training on their rights as a young worker. Rauscher et al.[29] surveyed fifty-four construction companies that employed young workers in North Carolina. Ninety percent of the construction firms provided safety training to young workers, although the authors suggest it is not adequate. Their findings highlight that 75 percent of youth working in construction firms get three or fewer hours of safety training

and that most of the training (87 percent) is provided through verbal explanations.

Limited data exist that characterize safety training that teen workers are receiving on the job. Almost no information exists on the training methods being used or the time being spent. The objective of this study was to characterize dangerous work activities and the safety training that teenagers get on the job, focusing on methods used, lessons taught, and time spent on training.

Methods

This was a mixed methods study. Teens were recruited from two public high schools in Louisville, KY. Both schools are magnet career academies that offer job training in a variety of different fields, as well as traditional education. In spring 2010, focus groups and interviews were held with forty-two teens. Recordings of the focus groups and interviews were transcribed, and thematic analysis was completed. Based on the themes, a questionnaire that focused on work characteristics, safety training, supervision, injury, and teen behaviors was created. The questionnaire was administered in spring 2011. All procedures were approved by the Institutional Review Board of the University of Louisville; the Data Management, Planning, and Program Evaluation Department of Jefferson County Public Schools; and the principals of the participating high schools.

Description of Schools

The schools selected for this study are public high schools in Louisville, KY. One school is an inner-city high school with 983 students who are predominantly African American (82 percent). Two-thirds of the school is female, and 77 percent of the students are eligible for free or reduced lunch. In addition to the traditional high school curricula, the school provides nine magnet programs that offer training and skills for specific careers. The second school was a working-class suburban high school with 1936 students who are predominantly white (72 percent). Slightly more than one-half (53 percent) are female, and 43 percent of students are eligible for free or reduced lunch. In addition to the traditional educational program, this school provides three magnet programs.

The magnet programs at both high schools provide teens the opportunity to focus on a career area of their interest. Examples of career areas include nursing, communication, preveterinary training, or business. In addition to in-class learning, most programs offer real-world opportunities for students. Local companies, universities, and community organizations work with the high schools to provide opportunities for career development. For example, students from the inner-city high school who select marketing and entrepreneurship as a magnet program manage a Papa John's Pizza Cart within the high school, while learning marketing skills and strategies during their four years in high school.

Students enrolled in the nursing magnet are certified as nursing assistants during their senior year of high school. Many of these programs prepare teens for entering the job market upon graduating from high school. Many of the programs also provide job opportunities for the teens during high school.

Study Design

This was a mixed methods study involving teenagers from both high schools. Detailed methods for the qualitative component have been published in Zierold et al.[28] In brief, five focus groups and seven interviews were conducted with working teenagers aged fifteen to nineteen years. Overall, there were eighteen males and twenty-four females, and the racial and ethnic makeup of the sample was 69 percent African American, 26 percent white, and 5 percent Hispanic. The teens worked on a variety of jobs; however, 56 percent worked either in the restaurant or food industry or in retail jobs. Transcripts from the focus groups were analyzed for emerging themes using inductive thematic analysis.[30,31] The themes from the focus groups and interviews were used to create a comprehensive questionnaire to investigate safety training, supervision, and injury.

Questionnaire

Based on the themes and findings from the focus groups and interviews, a comprehensive questionnaire was created. The questionnaire consisted of forty-seven questions divided into seven sections: demographics, job and work characteristics, safety training, supervision, injury, parent relations, and school performance. The questionnaire had multiple-choice questions with an option of "other" and a space to write in an answer if the teen's response was not listed. Before the questionnaire was administered to the high school students, it was pretested to ensure that the questions were understandable and that the questions captured the teens' experiences. Teens who did not work answered nine questions and finished within ten minutes. Teens who worked finished within twenty minutes.

Conducting the Survey

Surveying methods were different for the two high schools. At the inner-city high school, consent forms and questionnaires were given to the teachers in the career magnet programs. All the materials were placed in a box with a cover letter. Teachers distributed the consent forms to the teens to take home to their parents or guardians. The consent forms did not have to be returned; however, if a parent or guardian did not want his or her child participating in the survey, he or she was instructed to call the principal investigator. Two days after the consent forms were sent home, teachers handed out the questionnaires. An assent was stapled to the questionnaire, and teens were instructed to read it. By handing in a completed

questionnaire, the teens were assenting to participate. Teens who did not want to participate handed a blank questionnaire back to the teacher.

The principal of the second high school decided against allowing questionnaires to be distributed during class; therefore, a different recruitment strategy had to be used. Three members of the research team went to the high school to recruit students over a three-day period. Research team members arranged tables in a large open area outside the lunchroom and main office. Teens lined up to receive a questionnaire from the principal investigator. The survey was briefly explained, and the teens were told to read the assent form attached to the questionnaire. By responding to the questionnaire and keeping the assent document, teens were assenting to participate. When the teens were finished with their questionnaires, they returned to the principal investigator, who scanned them for completeness and gave the teens a consent form to take to their parents or guardians. Each teen's consent form contained a number that corresponded to his or her questionnaire number, so that if parents or guardians did not want their child to participate in the study, they could contact the principal investigator and have their teen's questionnaire removed. No parents or guardians contacted the principal investigator.

All questionnaires ($N = 930$) were reviewed by the research team for inappropriate answers, contradictory answers, or multiple answers. The principal investigator made the final decision regarding whether a questionnaire was removed. A total of forty-six questionnaires were removed from the sample (5 percent). The remaining final sample was 884 questionnaires. The data were extracted using Remark Office OMR software and imported into Excel.

Measures

To characterize dangerous work activities, teens were asked two questions, "If your supervisor asked you to do something you felt was dangerous, would you do it?" and "What tasks do you do on your job?" Thirty-five tasks and an "other" category were provided for teens to choose from. Safety training was characterized with three questions: "Safety training may include ways to prevent accidents. Does your job include any of the following methods of SAFETY training? *(Select ALL that apply)*"; "During your safety training, what did you learn? *(Select ALL that apply)*"; and "How much time was spent on safety training when you first started working at your job?" Teens could select from ten safety training methods, sixteen safety lessons, and safety training times that ranged from none to more than one hour.

Statistical Analyses

Data from the questionnaires were analyzed using SAS 9.3 (Cary, NC). To obtain a description of the dangerous work activities, work tasks, injuries,

safety training methods used, the lessons taught, and the time spent on training, frequencies and counts were completed. Comparisons between male and female teens were done using chi-square analysis. For small sample sizes, Fisher's exact test was used to compare male and female teens.

To compare whether males or females were given more training methods and whether males or females were taught more lessons, scores were calculated. The training methods score was calculated by summing the number of methods that the teens selected. For example, if a teen reported being trained by "safety videos," "computer safety quizzes," and "other," then the methods score is equal to three. Similarly, the lessons taught score was calculated by summing the number of lessons that the teens selected. Although sixteen safety training lessons were provided on the questionnaire, the lesson "how to do my job" was removed from the score, because this was used to assess whether teens confuse safety training with job training. The lessons taught score could range from zero to fifteen. To compare the scores between males and females, the Wilcoxon Rank-Sum Test with the normal approximation was used.

Results

Characteristics of the Respondents

Overall, 395 teens (45 percent) worked during the school year. The sample of working teens was 59 percent female, 55 percent minority, and 61 percent aged sixteen to seventeen years. The majority worked either in quick-service food establishments or full-service restaurants (51 percent) or in retail (15 percent). During the school week, 60 percent of teens worked four to six hours per day. Seventy percent of teens reported receiving safety training; however, 11 percent did not know if they had received training. There was not a significant difference between males and females reporting training (72 percent females vs. 67 percent males, $p = .50$).

Dangerous Work Activities and Injury

Overall, 21 percent of teens stated that they would do something dangerous if their supervisor asked them to. Males were significantly more likely than females to do something dangerous on the job (27 percent vs. 16 percent, $p = .022$). Table 1 displays dangerous job tasks by gender.

There were significant differences between males and females for cleaning tables and floors, other food prep, lifting heavy objects, working with grills, loading or unloading trucks, climbing ladders, and using power saws. Overall, 40 percent of teens were injured at work. The top injuries reported were cuts and burns. There was no gender difference in the prevalence of injury (39 percent female vs. 42 percent male, $p = .43$).

Table 1. Dangerous Job Tasks of Teen Workers, by Gender.[a,b]

Dangerous tasks	Total ($N = 395$) *n* (%)	Males ($n = 162$) *n* (%)	Females ($n = 232$) *n* (%)	*p*
Cleaned tables and floors	**154 (39)**	**42 (26)**	**112 (48)**	**<.01**
Took trash outside	115 (29)	44 (27)	71 (31)	.46
Other food prep	**88 (22)**	**28 (17)**	**60 (26)**	**.04**
Lifted heavy objects	**87 (22)**	**46 (28)**	**41 (18)**	**.01**
Worked near hot surfaces	73 (18)	30 (19)	43 (19)	.99
Cleaned kitchen	60 (15)	25 (15)	35 (15)	.93
Worked with ovens	59 (15)	22 (14)	37 (16)	.52
Worked with grills	**55 (14)**	**30 (19)**	**25 (11)**	**.03**
Worked with box cutters	53 (13)	24 (15)	29 (13)	.51
Worked with food slicers	50 (13)	21 (13)	29 (13)	.89
Worked with hot grease/fluids	49 (12)	17 (10)	32 (14)	.33
Used chemicals	49 (12)	17 (10)	32 (14)	.33
Worked with fat fryers	42 (11)	13 (8)	29 (13)	.16
Worked with sharp knives	38 (10)	14 (9)	24 (10)	.57
Baking	34 (9)	13 (8)	21 (9)	.72
Loading/unloading trucks	**30 (8)**	**23 (14)**	**7 (3)**	**<.01**
Climbed ladders	**27 (7)**	**17 (10)**	**10 (4)**	**.02**
Worked with compactor/box crushers	8 (2)	3 (2)	5 (2)	.28[c]
Worked with power-driven saws	**8 (2)**	**8 (5)**	**0**	**<.01[c]**

[a]Values in bold indicates statistically significant difference.
[b]Teens could select multiple job tasks.
[c]Fisher's exact test used due to small cell size.

Safety Training Methods Used

Table 2 reports the methods that teens reported as having been used in their safety training. There were a total of ten options that teens could select: nine methods of training and other.

The methods most commonly reported by the teens included safety videos (42 percent), safety lectures (25 percent), and safety posters or signs (22 percent). More females reported watching safety videos; however, equal proportions of females and males reported having safety training lectures. Compared with males, a significantly greater proportion of females reported training via safety posters or signs, reading materials, and computer quizzes. There was a difference in the number of safety training methods that females and males

Table 2. Reported Safety Training Methods by Working Teens.[a,b]

Training method	Total ($N = 395$) *n* (%)	Males ($n = 162$) *n* (%)	Females ($n = 232$) *n* (%)	*p*
Safety videos	**166 (42)**	**59 (36)**	**107 (46)**	**.05**
Safety lectures	100 (25)	40 (25)	60 (26)	.89
Safety posters/signs	**85 (22)**	**24 (15)**	**61 (26)**	**<.05**
On-the-job safety demonstrations	75 (19)	28 (17)	47 (20)	.52
Written safety quizzes	53 (13)	20 (12)	33 (14)	.65
Reading safety materials	**50 (13)**	**9 (6)**	**41 (18)**	**<.01[c]**
Computer safety quizzes	**37 (9)**	**6 (4)**	**31 (13)**	**<.05[c]**
Practicing accident response	31 (8)	11 (7)	20 (9)	.55
Other	15 (4)	7 (4)	8 (3)	.79[c]
Safety video games	9 (2)	2 (1)	7 (3)	.32[c]

[a]Values in bold indicates statistically significant difference.
[b]Teens could report multiple training methods.
[c]Fisher's exact test used due to small cell size.

reported. The median number of training methods for females was two (IQR = 3-1) compared with a median number of one for males (IQR = 2-1).

Table 3 displays the percent of teens reporting safety training methods by dangerous task done at work. Very few teens filled in a response for the other method category; however, responses included "the owner explaining everything to me," "parents," and "people help."

Safety Training Lessons

Table 4 reports the lessons taught during safety training.

The number one lesson that the teens selected that they ˆwere taught was "how to do my job (57 percent)," followed by "ways to spot hazards (36 percent)" and "how to operate equipment (35 percent)." Females reported being taught "first aid skills," "how to prevent slips, trips, and falls," "what to do when someone is injured," "what PPE [personal protective equipment] is needed," "what to do during a robbery," more than males. Only 17 percent of teens reported learning about what tasks they should not do and only 15 percent learned about child labor laws. There was a difference between males and females, with females reporting more lessons. The median number of lessons taught for females was 2 (IQR = 4.5-0) compared with males who reportedly had 1 lesson (IQR = 3-0).

Table 3. Percent of Teens Reporting Safety Training Methods by Dangerous Tasks.[a]

Dangerous tasks	Safety videos (%)	Written safety quizzes (%)	Safety lectures (%)	On-the-job safety demonstrations (%)	Safety posters/signs (%)	Computer safety quizzes (%)	Reading safety materials (%)	Practicing accident responses (%)	Other Methods (%)
Cleaned tables and floors	63	20	42	31	43	15	21	10	3
Took trash outside	60	17	35	30	39	13	19	8	3
Other food prep	60	14	30	29	48	14	24	8	5
Lifted heavy objects	59	16	53	30	38	13	20	8	5
Worked near hot surfaces	65	11	36	33	38	18	27	5	5
Cleaned kitchen	63	19	40	40	40	12	21	9	0
Worked with ovens	68	16	27	20	32	14	18	7	2
Worked with grills	74	16	26	30	44	23	21	9	0
Worked with box cutters	64	25	43	32	50	20	20	2	5
Worked with food slicers	70	8	22	27	41	16	22	8	3
Worked with hot grease/fluids	80	17	34	29	46	27	34	10	0
Used chemicals	65	18	43	33	48	28	23	8	3
Worked with fat fryers	76	16	41	32	43	22	30	3	3
Worked with sharp knives	65	4	43	43	43	22	39	9	4
Baking	64	9	36	23	45	18	23	9	9
Loading/unloading trucks	50	0	67	46	38	4	17	13	0
Climbed ladders	67	14	52	38	38	14	33	19	0
Worked with compactors/ box crushers	60	0	20	40	60	0	20	0	0
Worked with power-driven saws	20	0	80	60	0	0	40	40	0

[a]Teens could choose multiple tasks and multiple safety training methods.

Table 4. Reported Lessons Working Teens were Taught during Safety Training.[a,b]

Lesson learned	Total ($N = 395$) *n* (%)	Males ($n = 162$) *n* (%)	Females ($n = 232$) *n* (%)	*p*
How to do my job	**224 (57)**	**83 (51)**	**141 (61)**	**0.02**
Ways to spot hazards	144 (36)	62 (38)	82 (35)	0.42
How to operate equipment	**138 (35)**	**64 (40)**	**74 (32)**	**0.1**
Ways to remove or control hazards	118 (30)	43 (27)	75 (32)	0.21
First aid skills	**119 (30)**	**36 (22)**	**83 (36)**	**<0.05**
How to prevent slips, trips, and falls	**105 (27)**	**33 (20)**	**72 (31)**	**0.02**
What to do when someone is injured	**90 (23)**	**27 (17)**	**63 (27)**	**0.01**
How to read warning labels	87 (22)	34 (21)	53 (23)	0.68
What personal protective equipment (PPE) is needed	**71 (18)**	**16 (10)**	**55 (24)**	**<0.05**
What to do during a robbery	**72 (18)**	**22 (14)**	**50 (22)**	**0.04**
What tasks teen should not do	68 (17)	23 (14)	45 (19)	0.18
What chemicals are at my job	62 (16)	25 (15)	37 (16)	0.91
Child labor laws	58 (15)	22 (14)	36 (16)	0.58
Safe lifting practices	55 (14)	25 (15)	30 (13)	0.48
Where to locate Materials Safety Data Sheet (MSDS)	34 (9)	10 (6)	24 (10)	0.14
Other	29 (7)	12 (7)	17 (7)	0.96
How to read MSDS	25 (6)	9 (6)	16 (7)	0.67[c]
Safe climbing practices	22 (6)	9 (6)	13 (6)	0.99[c]
Safe driving techniques	11 (3)	6 (4)	5 (2)	0.37[c]

[a]Values in bold indicates significant difference.
[b]Teens could select multiple lessons.
[c]Fisher's exact test used due to small cell size.

Time Spent on Safety Training

Table 5 highlights the time initially spent on safety training.

There was a significant difference between genders. Males were much more likely to report having training that lasted thirty minutes or less (32 percent vs. 16 percent), and females were slightly more likely to have training that lasted more than one hour (21 percent vs. 17 percent).

Table 6 reports the percentage of teens reporting time spent on safety training for specific dangerous tasks. The tasks for which the greatest percentage of teens reported no time spent on safety training were working with compactors or box

Table 5. Time Spent on Safety Training When Teen First Started Job.[a,b]

Time spent on training	Total ($N = 395$) *n* (%)	Males ($n = 162$) *n* (%)	Females ($n = 232$) *n* (%)	*p*
				.004
None	80 (20)	30 (19)	50 (22)	
Less than 30 minutes	87 (22)	51 (32)	36 (16)	
30-60 minutes	101 (26)	36 (22)	65 (28)	
More than one hour	77 (20)	28 (17)	49 (21)	

[a]Time spent was missing for 50 teens.
[b]Percentages may not add to 100 percent because of missing responses.

crushers, working with power-driven saws, baking, and working with sharp knives. The tasks for which the greatest percentage of teens reported more than an hour of training included loading or unloading trucks, using chemicals, and working with hot grease or fluids.

Discussion

Overall, 40 percent of teens reported being injured at work during the year they worked. Although this percentage may appear high, it is similar to the results of other studies involving state-based survey research with teen workers, which shows high injury rates in teens.[14,32] Information on injury among teen workers varies in the literature based on the source of data utilized in the study. For example, studies using national surveys may not collect data on teens less than sixteen years, and studies utilizing emergency department data or workers' compensation claims count more severe injuries. For this study, teens were asked if they had any injuries at work during the year. This definition allows for less severe injuries to be reported. Within our sample, 13 percent visited a doctor for treatment. Unlike several other studies on teen workers,[12, 33–35] we found no gender difference in prevalence of injury. In this study, many of the dangerous job tasks that teens did were similar for males and females. For example, there was no gender difference in tasks that involved sharps (food slicers, use of knives) and hot surfaces, except for grills. The similarity in dangerous job tasks may partially explain the lack of gender difference in injury.

In this study, males were significantly more likely than females to do a dangerous task if their supervisor asked them to. Although there are no gender differences among teens getting on-the-job safety training, there are differences regarding training methods, lessons taught, and time spent on safety training. In short, females get more training, more methods are used, more lessons are taught, and more time is spent on training. Whether a true difference exists or whether females more accurately remember their safety training needs to be

Table 6. Percent of Teens Reporting Time Spent on Safety Training by Dangerous Tasks.[a,b]

Dangerous tasks	None (%)	Less than 30 minutes (%)	30 to 60 minutes (%)	More than one hour (%)
Cleaned tables and floors	23	22	33	14
Took trash outside	18	23	32	19
Other food prep	26	22	30	15
Lifted heavy objects	22	24	30	17
Worked near hot surfaces	25	24	33	13
Cleaned kitchen	27	20	29	15
Worked with ovens	28	26	21	19
Worked with grills	20	22	33	15
Worked with box cutters	17	26	32	23
Worked with food slicers	27	29	24	16
Worked with hot grease/fluids	17	23	29	25
Used chemicals	19	19	30	26
Worked with fat fryers	12	17	37	22
Worked with sharp knives	35	19	30	14
Baking	33	21	21	15
Loading/unloading trucks	13	23	27	27
Climbed ladders	19	22	33	19
Worked with compactors/ box crushers	38	38	13	13
Worked with power-driven saws	38	25	25	13

[a]Teens could choose multiple tasks.
[b]Percentages may not add to 100percent because of missing responses.

explored further; however, in this descriptive study, males experienced less in all measures of safety training.

The top two methods of safety training reported by females and males were the same: safety videos and safety lectures. Focus groups with teens highlighted that these are standard training, given to all employees. As a female working at a grocery store stated: "Yes, when I was hired, there were about five other people and we all got the same training videos and quizzes, so yes, it was all the same training." Females were almost two times as likely to perceive safety posters or signs as a training method that deserves some comment. While safety posters and signs may not be considered traditional training methods, Table 3 highlights that many teens perceived this method as safety training. In focus group discussions, several teens, including males, mentioned the use of posters to help them learn about labor laws. A male who worked at a grocery store stated, "Yeah, at my training, one day, one-day training, I said—well, one-day training's all about

paperwork, reading the safety . . . and they take you to the back to read a poster." Further research is needed to assess whether the location of the poster, the type of poster, or the design of the poster draws teens' attention to it as a source of safety information. Research focusing on what makes warning signs effective suggests that larger type, use of colors, use of pictorials, and location are important characteristics that determine if a person pays attention to the sign.[36–38] In addition to characteristics of the sign, individual characteristics play a role in responses to signs. Jiamsanguanwong and Umemuro[39] found that young people with a positive affect perceived greater hazards from warning signs, compared to those with a neutral or negative affect. Other issues such as perception of risk, age, gender, and ethnicity may have a role in whether people pay attention to signs.[37,40] Additional research is needed to understand why teens perceive posters and signs as training; for example, are teens' supervisors referring teens to look at posters, or are teens not getting quality training, so the posters become their resource.

While workplaces are predominantly using one or two safety training methods, research on learning may indicate that safety training should involve multiple learning modalities and perhaps be gender specific. In 1992, Fleming and Mills[41] classified learning modalities as visual (V), auditory (A), read-write (R), and/or kinesthetic (K) (VARK). Learners with V preferences learn best using maps, pictures, charts, graphs, and diagrams; learners with A preferences learn best by listening to and discussing material and ideas; those with R preferences learn best with reading essays, reports, documentation, and by writing essays and journaling; and K learners need to be physically involved to retain information, preferring field trips, trial and error, and hands-on approaches.[41] Multiple research studies have found that most people prefer to learn through multiple modalities.[42–46] Some studies have found that males and females have different preferences for learning modalities.[41,42] Fleming's work thus far has found that males prefer information to be presented kinesthetically (K) compared to women who learn more via reading and writing (R).[41]

Both the types and number of safety lessons being taught are a cause for concern. One of the most revealing findings of this study is that the top lesson selected by teens was "how to do my job." The high proportion of teens selecting this choice as a lesson, compared to other lessons, indicates that many teens confuse job training with safety training and/or that most workplaces are not providing safety lessons. As one fifteen-year-old female working in a pizza restaurant best described it: "It's when they teach you how to do your job so you can know to do it quickly and fast." Fewer than one-third of teens were taught lessons directly related to safe work practices, such as preventing slips, trips, and falls, safe lifting practices, and reading warning labels; and fewer than 20 percent were taught what tasks they should not do at work. While we would expect that the employer be responsible for enforcing child labor laws, in many instances,

the laws are not followed. As one fifteen-year-old male who worked in a grocery store stated, "Like I had one manager told me that I can't do that because I'm not supposed to cut because I'm too young, but then somebody else will let me" and "At my work they didn't enforce breaks until that girl passed out, then they decided to be strict about it. But they still don't do it." Both teens and employers need more information and training regarding child labor laws.

The time spent on safety training is minimal. Only 20 percent of teens had training that lasted more than one hour. Since most teens stated that their videos were twenty to thirty minutes long, teens were likely to view only one to three videos, with or without quizzes, during their safety training. As one eighteen-year-old male shared, "They put a lot of emphasis on this video, probably about a 30-minute-long video, just on safety . . . " and an eighteen-year-old female shared, "They were [laugh] some like 30 minutes, some were in parts of like 10 and 15." Males were twice as likely to have fewer than thirty minutes of safety training. Considering males were more likely to do dangerous tasks, the limited time in training is a concern. Further research into the effects of time spent on safety training is needed, focusing on both initial training and continued training for teen workers.

The study has a few limitations. This study took place in one location in the United States, and although the jobs the teens reported working are consistent with findings from other studies throughout the country, it is still possible that there may be some differences in jobs or job characteristics based on location. Since the data are self-reported by the teens, recall bias could be a limitation of the study. To minimize this bias, the questionnaire collected information only for teens who were currently working; we did not ask about previous work experiences.

Although the majority of teens reported receiving safety training, and females received more training than males, the overall message regarding safety training is bleak. One or two methods are used, very few lessons are taught, and very little time is spent on training overall. This descriptive study presents a first characterization of safety training. However, much more research is needed to identify what safety training methods and lessons are effective in preventing injury, how long and how frequent training should be, and whether potential gender differences in learning would require modifications in the delivery of safety training programs.

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