Improving the Experiences of Young Workers in the US and Canada: An Interdisciplinary Educational Program

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Table of Contents

Abstract

Introduction: Working for pay, either after school or during the summer, is a usual part of teenage life throughout the US and Canada, with up to 80 percent of teens working at some point prior to high school graduation. While most youth under age 18 work in the retail or service sectors, others are employed in manufacturing, construction, and agriculture. Young adults (age 18-24) are employed in an even wider variety of settings. Though child labor laws are designed to protect young workers age 14-17, employers often violate the laws and enforcement is limited.

Method: Engaging with multidisciplinary groups of scholars and practitioners, this project facilitated participants' abilities to more clearly integrate the expertise from disciplines of public health, child development, sociology, and organizational psychology and to consider how to improve dissemination efforts. The series of educational sessions is as follows: Session 1: Youth Employment in Developmental Context; Session 2: The Youth Labor Experience: Benefits, Risks and Policy; Session 3: Youth Work Evidence-based Interventions and Knowledge Mobilization; Session 4: Setting the Agenda for Research, Policy and Program Development.

Each multidisciplinary session followed a common format, with invited white papers defining the state of research/evidence base relevant to the particular theme and group discussion on identifying issues for future research and interventions. Each session had focused objectives based on pre-meeting development activities. Three to four commissioned white papers per session help organize background information and stimulate discussion at the sessions. At the sessions, authors provided a brief overview of their papers as a stimulus to discussion.

Participants, a mix of junior and more seasoned scholars an practitioners, were selected based on their involvement in research related to youth employment and with a deliberate effort to include scholars who represent a diversity of disciplines.

We received consultation from a Joint Organizing Group (JOG) chaired by **Dr. Runyan** and comprised of senior scholars who collectively represent diverse areas of expertise with interest and expertise in young workers): They were: ***Robert W. Blum***, MD, PhD, Johns Hopkins' Bloomberg School of Public Health; ***Letitia Davis***, ScD, EdM, Massachusetts Department of Public Health; ***John Lewko***, PhD, Laurentian University; ***Sandra Miller***, MA, Ontario Service Safety Alliance, Toronto, Ontario; ***Jeylan T. Mortimer,*** PhD, University of Minnesota; ***Kimberly Rauscher***,ScD, West Virginia University; and ***Richard Volpe***, PhD, University of Toronto.

Results: Thirteen white papers guided the discussions in the first three sessions. The sessions were attended by a diverse array of professionals from both the US and Canada. At the end of each session, the group generated research ideas and policy suggestions that were recorded and considered progressively throughout the project. The final session focused on the recommendations derived from the prior three sessions and resulted in the generation of policy recommendations for the United States and research recommendations pertinent to both US and Canada.

Conclusion: This project resulted in an important synthesis of expertise and ideas that inform next steps in progress toward protecting young workers.

Key Findings

Attendance: Across the four sessions, we solicited the input of more than 100 professionals, including a wide variety of social scientist (e.g., developmental psychologists, clinical psychologists, social psychologists, occupational psychologists, sociologists); lawyers, public health professionals, business professionals, physicians, and practitioners working in child labor. They were from both the United States and Canada and included seasoned scholars as well as more junior scientists. Members of the business community from both labor and management participated, as did members of advocacy groups and representatives of the US Department of Health and Human Services and of the US Department of Labor.

Session 1: Youth Employment in Developmental Context
December 7-9, 2007; Toronto, ON; Attendance = 27

Session 2: The Health Implications of Work among Youth
October 3-5, 2008; Chapel Hill, NC; Attendance= 29

Session 3: Young Worker Health & Safety Interventions and Knowledge Mobilization Strategies
June 20-22, 2009; Toronto, ON (Canada); Attendance = 33

Session 4: Setting the Agenda for Research, Policy and Program Development
November 17-19, 2010; Washington, DC; Attendance = 18

Recommendations:

Each of the first three meetings incorporated a series of white papers and discussion of major research and policy issues. The first meeting addressed developmental perspectives on youth work while the second examined youth work from a public health perspective and the third was focused on interventions and program evaluation. We used nominal group techniques to develop a list of needed research and policy interventions.

For the fourth meeting, we synthesized the ideas that had emerged from the prior sessions and organized them using the social-ecological framework to provide a foundation for setting a research and policy agenda. In this meeting, a facilitator (William Flexner) assisted the participants in prioritizing the topics, using the OptionFinder group decision support system that allowed rapid voting on priorities with immediate display of findings. This enabled participants to focus their attention on the topics of greatest perceived importance. Participants first engaged in silent brainstorming to generate ideas and then shared these ideas in small groups. Ideas from the small groups were then compiled into a common list, discussed as a large group, and then prioritized by perceived importance. Members of the organizing group and authors of this paper further refined these lists after the meeting. Topics within this domain are organized within the context of the socio-ecological framework. Though the research issues were common to both US and Canada, the current report focuses on policy ideas for the US. A similar

process to address Canadian policy ideas is in the planning stages.

Policy Recommendations: Policy recommendations addressed issues of data collection and surveillance and coordination of federal resources to address young worker safety. It included the suggestion that there be a resource center devoted the exchange of information about young worker safety so as to facilitate exchange of information about evidence-based interventions and from translational research. Recommendations about surveillance addressed the need for standardization of data collection and ongoing documentation of injuries to all young workers. There was also a statement recommending parity in the policy that addresses safety for children working in agriculture and recommendations that existing policies be more carefully enforced. The report also calls for standardized and improved training for young workers and their supervisors.

Research Recommendations – US & Canada

Over the course of the symposia, participants generated scores of research questions which fell into several broad domains. One was understanding the dynamics of employment and its effects on adolescent health and social development. Another addressed how best to improve working conditions and/or health outcomes for young workers. This includes studies of employers as well as workers and of research about how to gain adoption of evidence-based approaches as well as improved evaluation of existing interventions.

Scientific Report

Background

Young workers in the United States.

Because child labor laws in the United States focus on the age group under age 18, most American data gathering is concerned with this age group. In 2000, the estimated U.S. labor force participation rates for adolescents was 68% for 16-19 year olds,[3] though many begin working before their 16th birthdays. A recent report from Wisconsin indicated that 58% of teens in a study group of more than 5000 youth aged 10-14 surveyed in school reported working, with approximately 16% of working youth indicating they were "self-employed" (e.g. babysitting, lawn mowing).[4] Once adolescents enter the labor market, they usually continue working, though they change jobs frequently.[1] Most working adolescents are employed during both the school year and the summer.The largest proportion (approximately 60%) of adolescents work in retail places, of which half are eating and drinking establishments. The second largest number work in the service industry.[5] Types of work varies by sex, with the most common jobs for 16 year old males being cooks, stock handlers, baggers, cashiers, and food counter operators; while females most often work as cashiers, food counter operators, sales workers, wait persons, supervisors of food preparation and in service jobs.[5, 6] Many teens work long hours. One study showed that 39% work 20 or more hours per week in a typical week during the school year and that 25% work some or part of the day without an adult supervisor at the worksite[7]. Although estimates of illegal child labor are difficult to find because of the lack of high-quality data, there is some evidence showing that it is substantial; for example, using the 1980s Current Population Survey datasets and the 1979 and 1997 National Longitudinal Survey datasets, Kruse and Mahony[8] estimate that 153,600 children under 18 work illegally in the United States in an average week.

Young workers in Canada:

Unlike American data compiled for workers under age 18, the ages covered by the U.S. Fair Labor Standards Act, Canadian youth work data usually cover 15 to 24 year-olds. The wider age definition not withstanding, Canadian young worker results are similar to those in the U.S. Increasing numbers of Canadian youth are members of the work force. In 2000, approximately two-thirds of Canadian 18 to 20 year olds were part of the labor force during their final year of high school[9]. In the Province of Ontario, the most recent examination of work conducted by the Ontario Service Safety Alliance (OSSA) reported that 70% of all Ontario high school students work in the service industry as their first job experience. While the numbers of working youth continue to grow, scant attention has been paid to issues of occupational health and safety as they concern the young worker. Similar to U.S. data, Canadian youth continue to be injured at rates that exceed those for adult workers[10]. The OSSA report revealed, for example, that young workers in Ontario are three times more likely

to become injured than adult workers[11]. Breslin's recent research indicates that newer Canadian workers are at greater risk of injury than those who had been employed longer.[12]

A survey of Canadian working youth[13] provides other information about young workers' health and safety in Canada. Of the 1018 young workers interviewed from various employment sectors, 305 had been involved in a personal work "accident". Only 40% reported having received safety training from their employer/supervisor prior to commencing work. In addition, approximately one third of young workers thought they were receiving good supervision that served to protect them in the workplace

***Fatal injuries among young workers*:**

Despite its potential benefits, employment can have serious negative consequences for many adolescents. Several studies in the last decade have documented the magnitude of fatal injuries to young workers.[14-23] Between 1992 and 1997, more than 400 U.S. workers under age 18 died from occupational injuries.[22] Calculation of risks using actual hours worked converted to full time equivalency (since youth work part-time or for limited time periods), results in estimated fatality rates of 3.4 per 100,000 workers for 16 year olds and 3.7 per 100,000 for 17 year olds. These rates are below those for all workers (5.0) while the rate of 5.1 per 100,000 for 15 year olds was slightly higher.[24]

Characteristics of U.S. worker fatalities are compiled by the Bureau of Labor Statistics (BLS) using its Census of Fatal Occupational Injuries (CFOI), an annual census covering all sectors of the United States economy. Based on CFOI data for 1992 through 1998, an average of 67 workplace deaths occurred annually among youths under 18, approximately one tenth of all worker deaths.[5] According to the CFOI data from 1992-2002, 89% of fatally injured youths were male; 73.6% were White, non-Hispanic and 60.5% were ages 16 or 17. Young Hispanic workers experienced the second highest proportion (16.1%) of the reported occupational injury fatalities during this 11-year period, though they represent a much smaller proportion of the working population in the age group.

Contrasting sharply with the industry distribution of fatalities for older workers, about three-fourths of the deaths of youth workers under 18 were concentrated in three industries: agriculture (includes forestry and fishing), construction and retail trade.

Jobs in the retail trade industry comprise the largest share of youth employment and two thirds of fatalities among youth in retail trade between 1992 and 1998 were homicides.[5] Robberies accounted for one-quarter to one-half of all youth fatalities in retail trades.[23] In construction work, falls and electrocutions were the leading causes of youth fatalities.[24] Events or exposures commonly responsible for the reported fatal occupational injuries during the 1992-2002 period involved

transportation incidents. Incidents on highways, farms or industrial premises taken together made up 75% of all transportation incidents. Contact with objects and equipment, followed by assaults and violent acts round out the top 3 leading events or exposures associated with youth occupational injury fatalities.

The profile of fatal work injuries among youths (age <18 years) generally mirrors those incurred by adult workers. Noticeable differences involve homicide and highway incidents. Among youths, homicides were slightly more common than highway incidents as the leading cause of deaths at work.[23] Though highway incidents continue to be the leading cause of occupational death for adult workers, a larger proportion of vehicle-related incidents occurring on farms, industrial premises or in parking lots involved youth workers.[23]

***Nonfatal injuries among working youth**:*

Layne et al.[25] estimated that 64,100 youths between the ages of 14–17 were treated in emergency departments for occupational injuries in 1992 while NIOSH indicates the problem is even greater. The agency estimates that nearly 200,000 adolescents are injured at work every year.[26] Several studies have used workers' compensation data to determine the incidence of nonfatal injuries to teen workers,[16, 27-33] while others have examined first report of injury records[34] or surveyed adolescents.[34-40] A Washington State study using four years of workers' compensation data estimated the injury rate among 16-17 year-olds to be more than three times that for adult workers.[32] This is particularly troubling since child labor laws prohibit teens from working in occupations of highest risk, such as mining and manufacturing, and restricts involvement in construction. Evidence from Canada suggests that the lost time claims for workers in their first month on the job are as much as five to seven times greater than those in the second or subsequent months.[41] This is true for both teens and older workers. However, given that young workers change jobs frequently, the overall impact of increased risk in the first month on the job may be greater for teenagers.[41]

The most recent data reported by NIOSH,[42] reflecting injuries in 2001, indicate that an estimated 44,249 cases of occupational injury and illness involving days away from work among workers aged 16–19 years old. The majority of nonfatal occupational injury and illness cases involving days away from work were in wholesale (45.6%) and retail trade (21.2%).

There are noteworthy gender differences with respect to frequency and type of nonfatal injury. Male workers represent two-thirds (62.5%) of adolescent injuries tracked in Massachusetts.[42] The median number of lost workdays for young women (≤ 18 years of age) was 3 days; compared to 4 days for men of the same age group.

Influences on young worker safety:

Some industries and their associated job related conditions present high injury risk settings for teen workers[43-46]. Absence of safety devices and being rushed also constitute potential risk factors. Certain industries are more dangerous simply due to the types of jobs they offer. For example, the majority of young worker fatalities in agricultural settings[15, 18] are associated with operating tractors and other machinery.[20, 21, 46-48] Absence of safety devices and being rushed also constitute potential risk factors. Retail establishments may involve exchange of cash, a known risk factor for robbery and worker assaults[49-53] and for which potentially modifiable cash handling practices appear to be influential in the level of risk experiences.[52, 53] Hendricks et al[54] identified the specific safety practices of fast food restaurants that are associated with teens' increased risks of burns and falls in those settings, including the floor surfacing and how fryers are operated and maintained. There is evidence that the types of cutting instruments provided in grocery stores influence the incidence of cut injuries among teen workers.[27] Similarly, youth working in construction are exposed to various types of hazardous equipment (e.g. electrical equipment, machinery) as well as working conditions (e.g. heights, extreme weather, constantly changing work environments) that are associated with injury[55-57] while those working in jobs involving transportation are subjected to other hazard associated with operating, riding in, or working near motor vehicles.[19]

Several public health studies of teen worker safety in the U.S. and Canada have highlighted the need for more attention to the training and supervisory practices of businesses. Most young workers receive little training in general[13, 58] and, in particular, dealing with safety issues on the job such as hazard perception and risk management[59]. Likewise, literature in organizational psychology points to the important role of management in establishing a "culture of safety", as well in training and supervising young workers and developing strategies to reduce boredom and increase job satisfaction, alter perceptions of risk and of risk-taking behaviors, and improve supervision.[60]

Furthermore, several authors acknowledge the requirement of managerial leadership in creating and maintaining safe work environments through expressing personal interest in young worker safety, acting as a safety role model, encouraging safe work behavior, and challenging workers to be resourceful in terms of improving safety conditions [61-63]. Moreover, a company's health and safety culture influences learned behavior[62]. Thus, the importance of the manager/supervisor as an agent of safety cannot be underestimated as their role in safety in the workplace has greater implications.

Other outcomes of work:

Developmental psychology and education have identified various factors associated with positive work experiences for adolescents, positive outcomes of work during adolescence and issues surrounding the transitions from school to work as adolescents mature into adulthood. For decades, employment has been

regarded as an important socializing agent[64]. Depending on its quality, employment may promote feelings of mastery, personal happiness and improved school behavior[65, 66]. Working can also be associated with personal well-being and school performance[67]. In contrast, young workers in poor quality employment (few opportunities for skill use and learning) are more cynical and less motivated to complete tasks properly[68] and have lower work values[69].

Good work experiences aid in the transition to adulthood and promote independence, social responsibility and a positive orientation to occupational achievement[70, 71]. Work settings introduce youth to norms and rules of society and lead them to reflection and questioning, resulting in the development of their own ideas about society and the way they personally want to deal with it[72]. Norms, rules and views regarding risks, hazards, safe work, dealing with authority figures and supervision begin to take shape. In this context, the contents of a policy document prepared for the Family Youth Services Bureau "Understanding Youth Development: Promoting Positive Pathways of Growth"[73] theorizes that development occurs through reciprocal and dynamic interaction that takes place between individuals and various aspects of their environment. Although teens take many different routes to adulthood, four critical features have been said to differentiate youth developing into successful or unsuccessful adults. They include a sense of industry and competency, a sense of control over one's fate and life, a sense that the adolescent is connected to other persons, and community and his/her society, and a stable identity.

Need for more integrated thinking and knowledge mobilization:

The work we propose through these educational sessions is critical in helping to bridge the gaps among the varied disciplines and literatures pertaining to young worker health and safety and in synthesizing that literature in a manner that facilitates knowledge transfer among researchers and practitioners. This work is consistent with several recommendations contained within the National Occupational Research Agenda (NORA) of the National Institute for Occupational Safety and Health (NIOSH). For example, the research agenda report on workplace injury, "Traumatic Occupational Injury Research Needs and Priorities"[74] highlights the need to bring together a "range of disciplines to address worker safety issues, stating, that a "multidisciplinary approach will also be required to accomplish the objectives and tasks set forth her. Only through the collaborative efforts of epidemiologist, ergonomists, engineers, psychologists, sociologists, economists, occupational physicians and nurses, and others can we reduce the burden of workplace injuries in our society." (page 14).

Likewise, the NORA report on the organization of work entitled "The Changing Organization of Work and the Safety and Health of Working People"[75] called for a much stronger public health commitment to understanding work organization as a component of workplace safety. They argue that "steps need to be taken to…develop multidisciplinary training essential for research in this area." (page

vii). Furthermore, the report stresses the importance of collaboration among stakeholders in both the research and practice domains.

This sentiment is also echoed by the Institute of Medicine report, Safe Work in the 21st Century: Education and Training Needs for the Next Decade's Occupational Safety and Health Personnel, published in 2000[76], which recommended expanded training focused on occupational injuries, integrating with behavioral health science programs so as to give greater focus to understanding the organization of work as well as the physical and mental health effects of work and work stress.

Despite these several calls to action, the literature has not fully integrated how developmental processes, social environments of work and family life and physical work environments contribute to youth occupational health and safety. Increasingly, the workplace is becoming a major socializing agent for adolescents behind family, school, and peers [77]. Facilitating this socialization in a manner that is healthy and safe requires new thinking that extends beyond the boundaries of any one discipline and that addresses practical applications of knowledge. Ultimately, improvements in occupational health and safety in the workplace requires the challenging task of exchanging relevant information among researchers from varied fields, as well as those who work with young workers as parents, employers, trainers and/or supervisors as well as the young workers themselves.

Part of the process of helping to integrate research and practice relies on development of knowledge utilization models that enable dissemination in a context that goes beyond merely providing findings, but to engaging researchers and practitioners in collaborative processes through which research findings can best inform practice and through which practice experiences further stimulate research Levin states[78] that “no country [including Canada, the United States and the United Kingdom] has what appears to be a comprehensive strategy” (pp. 4) for knowledge transfer. There has been little attention given to the dissemination of health and safety knowledge in general, and more specifically, to the knowledge transfer process involving young worker occupational health and safety research[79]. To advance an integrated agenda of research, program development, policy and practice in young worker occupational health and safety, we propose to bring together current and future researchers, policy, program and work place personnel to stimulate the best thinking along the entire research-practice continuum. This work was not only critical, but also very timely.

Specific Aims:

Aim 1: To enhance interdisciplinary scholarship related to the health and safety effects of youth labor by engaging a diverse group of senior and junior investigators, including doctoral students, with policy and program leaders concerned with various aspects of youth employment;

Aim 2: To synthesize and make more accessible to learners the current information addressing how theories and principles of youth development, organization of work, and health and safety practices influence the risks or benefits of youth labor;

Aim 3: To engage an array of scholars and practitioners in setting an agenda that will facilitate more integrated approaches to training researchers, practitioners and business leaders in improving the quality of work for young workers; and

Aim 4: To develop strategies to improve the continued dissemination of knowledge from research on youth employment to future students, practitioners, policy makers , researchers, and business leaders.

Methodology:

This project relied on a series of 4 educational sessions to be held over a four year period. Each included 25-30 invited participants. The UNC IPRC provided the organizational leadership for this process, with continuing consultation from a Joint Organizing Group (JOG). Two sessions were conducted in the U.S. and two in Canada.

The goal of this series was that of “helping a diverse group of participants update and synthesize their understanding of the benefits and risks of youth employment by bridging several disciplines and setting an agenda for future scientific and programmatic directions throughout North America.”

Educational Program:

Overview: The series of sessions was designed to provide a mechanism to identify issues of importance for improving the experience of young workers by examining literatures approaching youth labor from different perspectives. As an outgrowth of this, we formulated an interdisciplinary research agenda and considered strategies for appropriate policy and programmatic interventions to enhance the experience and reduce hazards and negative outcomes as well as the means by which knowledge transfer and dissemination can best occur among the research and public health practice and business communities concerned with young workers.

The series of educational sessions was as follows:

Session 1: Conceptual and Theoretical Grounding on Youth Development and Work
Session 2: The Youth Labor Experience: Benefits, Risks and Policy
Session 3: Youth Work Evidence-based Interventions and Knowledge Mobilization
Session 4: Setting the Agenda for Research, Policy and Program Development

Each of the first three sessions followed a common format, with invited white papers defining the state of research/evidence base relevant to the particular theme and group discussion on identifying issues for future research and interventions. Sessions were multidisciplinary in makeup, including for example, the appropriate combination of disciplines, varying slightly in number depending on the specific topic of discussion. These included public health/injury control, developmental psychology, organizational psychology/management, business, labor, sociology of work, education, occupational health, safety, policy, policy advocacy. Each session had focused objectives based on pre-meeting development activities.

We commissioned white papers for each session that were prepared in advance so as to help organize background information and stimulate discussion at the sessions. These were circulated among all white paper authors, reviewed by the JOG, then revised and sent to all participants in advance of the session. At the session, authors were asked to provide a brief overview of their papers as a stimulus to discussion.

In preparation for the series of meetings, we conducted a 2 stage Delphi survey among about two dozen researchers and practitioners to identify and refine key topics for inclusion in the session as well as suggested session participants and format.

The Delphi survey helped to narrow our focus to the topics of most importance, facilitated identification of additional potential participants and literature. The Delphi questions were refined by the JOG

P*rogram evaluation strategy*:

We will undertook two types of evaluation to assess the success of the specific sessions and overall project in achieving the stated objectives. We compiled process information quickly so as to guide us in making improvements in future sessions. Impact data were assembled within six months after each session and at the conclusion of the project.

Process evaluation: To assess process, participants were invited to complete a brief, self-administered questionnaire at the conclusion of each session and consisted of the following elements.

1) Documentation of participation by tracking invitations offered and attendance to assess proportionate participation.
2) Careful review and editing of the white papers to ensure that they are of high quality and address the requested topics.
3) Assessment of participants at each session, via questionnaire, to understand:
    a. their preparation prior to attending the session as measured by their report of their thoroughness in reading the pre-meeting materials;
    b. level of participation in discussions;
    c. participant satisfaction with:
        i. the pace and format of the session;
        ii. usefulness of the overall content;
        iii. helpfulness of the white papers;
        iv. quality of presentations and discussion;
        v. the overall session in achieving its objectives; and
        vi. logistics and facilities.

Impact evaluation: To assess impact, we followed up with participants six months after their attendance to assess how their participation in the session may have influenced current work. The purpose of this information was to assess the extent to which the sessions affected future work of the participants. The impact evaluation was intended to answer the following questions about each session. Immediately following the session, to what extent do participants report that the session:

a. provided them with new theoretical or methodological perspectives or knowledge to the issues associated with youth employment?
b. helped them acquire new skills to carry out their research and/or practice?
c. increased their interest in addressing youth labor issues?
d. increased their network of persons to whom they anticipate turning for help or collaboration in addressing issues associated with young workers?
e. provided them with useful materials for furthering their own education and that of others.

After six months, we examined participants again, via an electronic survey, to ascertain:

a. What specific new activities the participants report that they have engaged in since the session and using the knowledge, skills, or contacts made at the session;
b. How do participants report that they have altered their approach to learning about young workers as a result of participating in the session?

c. What, if any, changes do participants report in the types of information they have used to develop new approaches to addressing young worker issues.

Results and Discussion:

Objective 1: By the end of the first six months of the project, we will have engaged a core group of scholars to serve as the Joint Organizing Group (JOG) representing different expertise on youth labor who are willing to engage in the agenda setting process.

Measurement: The Joint Organizing Group (JOG) was comprised of eight individuals, three from Canada and five from the United States. This group selected the white paper authors and advised on whom to invite to each session, helped synthesize the results and reviewed the final manuscript.

Objective 2: During the program implementation phase, we will plan and implement four educational sessions designed to facilitate the exchange of scholarly information that identifies research themes, methods, and potential new research directions, collaborations and applications of research to program and policy.

Measurement: We conducted four sessions, as planned. These sessions were informed by the creation of White Papers for the first three meetings, and resulted in compilation of research and policy recommendations.

***Objective 3*:** By the end of the project period, we will produce a compendium of review papers addressing the state of the science associated with youth work from multiple perspectives.

Measurement: Fourteen white papers were produced and distributed to participants as a means of stimulating discussion at each of the first three meetings.

Objective 4: By the end of the project period, we will develop and publish at least four papers putting forth an agenda for future research and policy development to enhance youth employment in North America.

Measurement: Two papers from the project have been published. Others are being compiled for inclusion in a proposed on-line compendium with which we are working with Dr. Dawn Castillo to publish on the NIOSH webpage.

Objective 5: By the end of the project, we will identify materials appropriate for further training of researchers and practitioners to address the development, health and safety issues associated with young workers.

Measurement: At the third session, participants shared numerous curricula and resource materials with each other, facilitating exchange of information and ideas across the US-Candian border and among participants from multiple locales within the US and Canada.

Objective 6: By the end of the project, we will have evaluated the success of the training sessions in achieving the specific objectives outlined for each session.

Process measurement: Assessment of participants at each session, via questionnaire, enabled us to understand: their preparation prior to attending the session as measured by their report of their thoroughness in reading the pre-meeting materials; level of participation in discussions; their satisfaction with the pace and format of the session; usefulness of the overall content; helpfulness of the white papers; quality of presentations and discussion; the overall session in achieving its objectives; and logistics and facilities.

Table 1. Process findings are summarized in the table below, by session

	Mean Scores (range) **Strongly Disagree = 1; Strongly Agree = 10**		
	Session 1	**Session 2**	**Session 3**
This session has enhanced my knowledge about young worker safety and health.	8.6 (3-10)	9.4 (8-10)	7.3 (3-10)
Overall, the session gave me new ideas that I can use in my work.	8.7 (6-10)	8.9 (7-10)	8.0 (5-10)
Overall, the session provided me with new skills that I can use in my work.	6.3 (3-10)	7.4 (4-10)	7.1 (3-10)
The new people that I met at the session will be a resource for me in my work.	8.9 (5-10)	8.7 (7-10)	8.6 (3-10)
I would recommend future sessions to colleagues.	9.0 (3-10)	9 (7-10)	8.5 (4-10)
The overall pace of the session was appropriate.	9.0 (7-10)	8.1 (5-10)	7.5 (3-10)
The project staff provided excellent customer service before I came to the session.	9.8 (8-10)	9.4 (7-10)	9.0 (3-10)
The project staff provided excellent customer service during the session.	9.8 (8-10)	9.7 (7-10)	8.9 (3-10)
The materials provided in advance were helpful.	9.4 (8-10)	9.6 (8-10)	8.6 (2-10)
The white papers were a helpful way to focus the discussion.	8.9 (5-10)	9.5 (7-10)	8.3 (2-10)
The discussion format of the session was helpful	8.9 (7-10)	9.3 (7-10)	7.1 (2-10)
It was helpful to have varied disciplines represented at this session.	9.4 (5-10)	9.7 (7-10)	8.8 (3-10)
I was able to interact constructively with people outside my discipline.	9.1 (7-10)	9.4 (7-10)	8.1 (4-10)
I enjoyed the session.	9.4 (7-10)	9.5 (9-10)	8.1 (4-10)
The session will help me in teaching others about young workers.	8.6 (2-10)	9.1 (8-10)	7.6 (3-10)
The session was worth my time.	9.5 (7-10)	9.4 (8-10)	8.4 (3-10)

Impact measures from the three sessions: Survey instrument at end of each session and six months post-session to ascertain self-reported: gain in knowledge of theoretical or methodological perspectives; skill improvement; changes in interests related to young worker health and safety; improvements in networks of colleagues also concerned with young workers; utility of materials provided for furthering their own education and helping them train others. The key results are provided in Table 2 below.

Extensive qualitative data also documented the views of the participants after each of the first three sessions. We used the results and suggestions from each session to make improvements in how subsequent sessions were designed and carried out. Overall, the participants were pleased with the experience, though they had suggestions for improvements in process – particularly how discussions were handled and assuring there was enough time for full discussion of each white paper.

Table 2. Key impact findings are summarized in the table below, by session

	Mean Scores (range) Strongly Disagree = 1; Strongly Agree = 10		
	Session 1	**Session 2**	**Session 3**
How much did your knowledge of theoretical foundations of youth employment and adolescent development improve as a result of participating in this session?	6.8 (2-10)	7.8 (5-10)	6.9 (2-10)
How much did your knowledge of methodological issues related to youth employment and adolescent development improve as a result of participating in this session?	5.4 (2-10)	6.8 (3-10)	7.1 (2-10)
To what extent did you learn new skills as a result of this session?	5.1 (2-10)	6.6 (2-10)	6.5 (2-10)
To what extent did the new knowledge or skills you learned help you improve your ability to do research on young workers?	7.8 (5-10)	7 (1-9)	6.3 (2-10)
To what extent did the new knowledge or skills you learned help you improve your ability to do work that directly results in better health, safety or other outcomes for young workers?	7.3 (3-10)	7.3 (1-9)	7.3 (5-10)
To what extent did attending this session help you establish useful contacts or relationships with other participants?	8.8 (4-10)	8.9 (7-10)	8.9 (7-10)
How helpful was the content provided at the session?	8.8 (6-10)	8.9 (8-10)	8.3 (4-10)
How interested are you in forming collaborations with others to work on research related to young workers?	8.5 (4-10)	9 (7-10)	9.0 (7-10)
How interested are you in forming collaborations with others to work on non-research efforts to help young workers?	7.5 (2-10)	8.4 (4-10)	8.6 (3-10)
Over the next year how likely are you, personally, to attempt to integrate concepts from other disciplines as you do your work related to young workers?	8.4 (5-10)	9 (8-10)	8.1 (4-10)

Conclusions:

This series of symposia resulted in significant exchange of information and ideas across a multidisciplinary group representing two countries with different policy environments. One of the greatest benefits to the participants, as reported by them in the evaluation, was the opportunity to exchange ideas and information and meet scholars and practitioners they didn't previously know. Only time will tell whether these linkages result in new and meaningful collaborations. However, we are aware that some collaborations did emerge from the meetings in the form of joint US-Canadian proposals for further study of teen labor.

Another major output from the project is the paper to appear in the May/June 2012 issue of Public Health Reports, summarizing the policy and research recommendations emanating from the project. Further, we are hopeful that the white papers will be published during the next few months as a series of proceedings on the NIOSH website (pending agency approval).
Include the Inclusion Enrollment Table with the scientific report (form can be found at (http://grants.nih.gov/grants/funding/2590/2590.htm). Information that is considered proprietary for commercial purposes should be clearly noted as such in case a Freedom of Information Act (FOIA) request is received. Otherwise, the entire report may be released.

Publications.

Journal Article:

Runyan CW; Lewko J, Rauscher K. Setting an Agenda for Advancing Young Worker Safety in the US and Canada. Public Health Reports (In press)

Sudhinareset M, Blum RW. The Unique Developmental Considerations of Youth-Related Work Injuries. International Journal of Occupational and Environmental Health. 16(2): 225-9. 2010.

White papers:

1. The Organizational Context of Youth Employment
E. Kevin Kelloway, PhD
Professor of Management and Psychology, Sobey School of Business
Saint Mary's University, Halifax, NS

2. **Adaptation to the World of Work and the Role of Worker**
Jeremy Staff, PhD
Pennsylvania State University
University Park, PA

3. Assessing Adolescent Decision-making Competence
Baruch Fischhoff, PhD

Carnegie Mellon University, Pittsburgh, PA

4. **Work and its Positive and Negative Effects on Youth's Psychosocial Developmenta**
Jeylan Mortimer, PhD,
University of Minnesota, Minneapolis, MN

5. **Risk Factors for Nonfatal Work Injury for Young Workers: A Review of Two Relevant Literatures**
F. Curtis Breslin, PhD and Peter M. Smith, PhD
Institute for Work and Health, Toronto, ON

6. **Data Collection Systems used in the United States & Canada to Understand the Injury and other Health Risks or Work**
Part 1-The US Perspective: Tracking Work-Related Injuries among Young Workers: An Overview of Surveillance in the United States
Letitia Davis, ScD, EdM, and Beatriz Pazos Vautin, MPH
Massachusetts Dept. of Public Health, Boston, MA

7. Data Collection Systems used in the United States & Canada to Understand the Injury and other Health Risks or Work Part 2-The Canadian Perspective: The Health Implications of Work among Youth: A Preliminary Investigation of Data Systems to Understand Injury and other Health Risks of Work in Canada
Mieke Koehoorn, PhD
University of British Columbia, Vancouver, BC

8. The State of Science: A Review of the Research on how Work-based Injury Risks are Distributed Across Youths' Jobs in the United States and Canada. Part 1-The US Perspective: The Prevalence of Working Conditions Associated with Adolescent Occupational Injury in the United States: A Review of Literature
Kimberly J. Rauscher, MA, ScD, and Carol W. Runyan, MPH, PhD
University of North Carolina, Chapel Hill, NC

9. The State of Science: A Review of the Research on how Work-based Injury Risks are Distributed Across Youths' Jobs in the United States and Canada. Part 2-The Canadian Perspective: A Review of the Research on How Work-based Injury Risks are Distributed Across Youth's jobs in Canada
Peter M. Smith, PhD and F. Curtis Breslin, PhD
Institute for Work and Health, Toronto, ON

10. **Adolescents' and Young Adults' Unique Developmental Factors in Relation to Work-related Health Risks**
May Sudhinaraset & Robert W. Blum, MD, PhD
Johns Hopkins University, Baltimore, MD

11. **The State of the Art in Young Worker Safety Interventions in the United States**
Susan Gallagher, MPH, and Sara Rattigan, MS
Tufts University School of Medicine, Boston, MA

12. **Knowledge Mobilization & Dissemination Practices in Occupational Safety & Health**
Peter Levesque, PhD, Knowledge Mobilization Works
Ottawa, ON

13. **Evaluating Interventions to Prevent Injuries to Young Workers**
Harry Shannon, PhD,
McMaster University, Toronto, ON

14. **Young Worker Health and Safety Interventions in Canada**
Sue Boychuk,
Ontario Ministry of Labour, Toronto, ON

Inclusion of gender and minority study subjects. 52 females and 37 males participated in the meetings.

Inclusion of Children. No children were involved in these discussions among academic and practice professionals.

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