

adults are more likely than adults to believe that they are invincible and that they will not get hurt when taking risks (Lapsley, Aalsma, & Halpern-Felsher, 2005) because of perceived invulnerability to injury, harm, and danger (Lapsley & Hill, 2010). One perspective is that young workers feel impervious to physical danger at work, blinding them to potential hazards, dampening their motivation to speak up about potential hazards, or both. While the broader literature on the relationship between invulnerability and risk-taking has produced inconsistent results, there is a gap in the literature on the relationship between invulnerability and preventative behaviors such as safety voice (i.e., speaking out and challenging the status quo with the intent of improving the safety of the work situation; Tucker, Chmiel, Turner, Hershcovis, & Stride, 2008). The present study examines the relationship between young worker invulnerability and safety voice through the development of a model about the perceptions of safety, and safety voice mediated by the fear of injury, and moderated by invulnerability. The current paper investigates in two studies the role of invulnerability in predicting young workers' intentions to speak up about hazardous work (safety voice). We propose a moderated-mediation model in which perceptions of hazardous work are related to safety voice intentions via fear of injury, and that higher perceptions of invulnerability buffer (a) the extent to which potential hazards generate fear of injury and (b) the extent to which fear of injury motivates safety voice intentions. In Study 1, we randomly assigned participants ( $n = 115$ , aged 15-25) to either an unsafe or safe scenario depicting working conditions in an industrial kitchen. Participants with lower perceptions of invulnerability reported higher safety voice intentions across all levels of fear of injury. Participants with higher invulnerability perceptions reported as high safety voice intentions only when fear of injury was high, and reported much lower safety voice intentions than those with low levels of invulnerability when fear of injury was low. Study 2 replicates this model using three waves of field data from young workers ( $n = 67$ ) in the Canadian province of Manitoba, each of whom kept the same job throughout the 2012 summer vacation. Overall, the results from the 2 studies suggest that young workers who perceive themselves as invulnerable to physical injuries at work are less likely than their more vulnerable counterparts to speak up about safety concerns especially when the work environment is not particularly hazardous.

### **Evaluating a Total Worker Health Training for Young Workers: Generalizability and Durability**

*Diane Rohlman (University of Iowa)*

There are many benefits to employment for young workers, including increased self-esteem, autonomy, responsibility, and the development of job skills as well as bringing in income (Baron, 2005). However, young workers (under age 25) have limited job experience and often engage in unsafe, risky behaviors. Several factors that increase young workers' risk of injury have been identified, including hazards found in the workplace (e.g., knives, ladders), perceived workload (e.g., pressure to complete work more quickly), and minority status. Young workers, particularly those in their first job, may be at greater risk because of lack of training and skills that may make them less likely to recognize hazards, speak up regarding safety concerns, and less aware of their legal rights as workers (Estes, Jackson, & Castillo, 2010). Injury and illness are not the only risks to teenage workers. A study of high school students found that working 20 hours or more a week during the school year was associated with higher levels of emotional distress, more substance abuse, and earlier onset of sexual activity than experienced

by students working less than 20 hours a week or not at all (Teixeira, Fischer, Nagai, & Turte, 2004). Several studies have shown that working adolescents wake up earlier, have a shorter nocturnal sleep duration, and a higher level of sleepiness during wake time during the week than nonworking students (Teixeira, Fischer, & Lowden, 2006). Although many protections are in place for adolescent workers through regulation of hours of employment and limiting contact with dangerous machinery and hazardous exposures, the non-fatal injury rate in young workers is twice the rate of older workers (Estes et al., 2010). The National Institute for Occupational Safety and Health (NIOSH) developed the Youth@Work: Talking Safety curriculum to address the needs of young workers (<http://www.cdc.gov/niosh/talkingsafety/>). This classroom-based training addresses hazard identification and control, emergencies at work, rights and responsibilities, and communication. Promoting U through Safety and Health (PUSH) expanded the content of the Youth@Work curriculum to include information addressing health, safety, and communication in an online format (Rohlman et al., 2016). Total Worker Health® is a strategy that integrates health promotion with injury prevention. Interventions addressing TWH improve workplace health effectively and more rapidly than wellness programs focused only on health promotion (Anger et al., 2015). Occupational training is designed to protect workers from hazards in the workplace. Employers are required to provide workers with a safe workplace through training and personal protective equipment; job tasks should be carefully assigned based on physical capabilities and age, and supervised to ensure proper performance. However, approximately half of young workers report receiving no safety education (Chin et al., 2010) and no studies have evaluated durability, retention or training effectiveness in younger workers. PUSH was found to be effective in increasing the safety and health knowledge among young adults working as lifeguards in a parks and recreation department, although this initial increase in knowledge did not remain at follow-up three months later (Rohlman, Parish, Elliot, Hanson, & Perrin, 2016). To examine generalizability, the training was evaluated among food service workers and young workers working in a range of industries recruited via Amazon Mechanical Turk (MTurk). A similar increase in knowledge was found immediately after the training was completed, followed by a decrease at follow-up. However, the majority of both the MTurk and parks and recreation participants reported liking the training content and the format. An open-ended question at follow-up was used to assess if the PUSH training prepared them to handle situations at work. Thirty percent provided an example of how the training increased awareness or changed their behavior. Several specifically indicated being more willing to speak-up about safety. In addition, during 2014 to 2016, new seasonal workers in a parks and recreation program completed the training. This cohort was followed each year to examine the duration of knowledge and impact of training on behavior; data analysis examining retention of knowledge and changes in attitudes and behaviors is in progress. These findings demonstrate that the PUSH training was effective in increasing the safety and health knowledge among young workers from different backgrounds. Although knowledge increases were not maintained at follow-up, young workers reported liking the training and several provided examples of how the training changed their awareness of safety and health hazards or their behaviors at work. Although employers are tasked with providing safety training to their employees, such training is not always well accepted or appropriately designed to reflect the needs of a young audience new to the workplace. Additionally, scientific research and practical experience demonstrates that comprehensive practices and policies that take into account the

work environment while also addressing the personal health of individuals, are more effective in preventing disease and promoting health and safety than adopting separate approaches.

*Discussant: Rebecca Guerin (NIOSH)*

## Independence Ballroom B

### Surveillance Among High Risk Workers

#### PAPER SESSION

#### Healthy Work Collaborative: Addressing Precarious Work through Social Change

*Christina Welter (University of Illinois at Chicago)*

**Problem.** Characterized by low wages, no termination protection or benefits, and limited workplace rights, precarious employment does not have a consistent label, and is variously referred to as non-standard, contingent, and insecure; and precarious workers are referred to as vulnerable and disposable. Limited available data suggest that precarious jobs are more dangerous at work and adversely impact health away from work.

Precarious employment is complex in nature and an unexplored area of research. There are limited sources of data about the health impacts of precarious employment. Additionally, there is no clear definition or guidance on the implementation of Total Worker Health® programs in the context of precarious employment. Due to its uncertain nature, precarious employment precludes the workplace as a point of intervention. Workplace-based interventions also disregard political, economic and social factors fracturing traditional employer-employee relationships.

**Procedures.** To address structural and systems-level barriers and facilitators to healthy work, the UIC Center for Healthy Work's, Healthy Communities through Healthy Work (HCHW) project, has taken a novel integrated systems-based, capacity-building approach to learning about and addressing precarious work. HCHW works to create a system to generate and support healthy work in the context of precarious employment by (a) assessing existing systems and their capacities for supporting healthy work and (b) developing organizational and systems structures to facilitate continuous learning.

HCHW is an action research (AR) project which includes multiple rounds of systematic inquiry. HCHW developed a systematic approach for undertaking an environmental scan through the use of semi-structured qualitative interviews. Environmental scan (ES) questions addressed organizational perceptions of worker health: strengths, opportunities, challenges and threats related to health in the context of precarious work; existing business and employment networks that support worker health promotion and protection; policy level proposals underway that might be leveraged to address precarious work; initiatives that promote skills and the knowledge base of workers to increase self-efficacy for healthy work; and communication channels that exist for distribution and the two-way exchange of inquiry and information sharing.

HCHW researchers analyzed and interpreted the data collected in the interviews through the development of a priori and emergent codes for thematic analysis. Through analysis of ES findings, HCHW researchers identified a lack of collaboration between public health,

healthcare, and labor sectors, despite their understanding that work is a social determinant of health. Findings helped develop the next AR phase, a multi-sectoral capacity-building initiative, titled the Healthy Work Collaborative to Map Action for Social Change (HWC).

The HWC invited public health and healthcare organizations to engage with labor, government, and non-profit organizations to address a work-related issue affecting the communities they serve. Through an application process, the HWC invited public health and healthcare organizations to engage with labor advocacy organizations to address a work-related issue affecting the communities they serve. Eight teams of multi-sectoral partners participated in the six-session exploratory process. Representatives from the labor sector provided technical assistance and facilitated training on Power Mapping, Theory of Change, and Action Planning. Technical assistance and training helped public health and healthcare organizations define precarious work and build organizational capacity to create policy, systems, and environmental change.

**Analyses.** An essential feature of action research is the value of reflection, dialogue, and learning (Ivankova, 2015). Multiple reflection methods were used to evaluate increased knowledge, capacity, and partnership of HWC participants. Participants were asked to complete a pre- and post- evaluation at the beginning and end of the six-session process. The pre- and post-evaluation was focused on their understanding of precarious work, action learning, their relationship with their project partners, skills built through tools and approaches presented, the provision of technical assistance, and connections and partnerships made throughout the HWC. Participants were also asked to complete surveys every two weeks prompting HCHW researchers to review/adapt the HWC curriculum as needed.

**Results.** Analysis of quantitative and qualitative evaluation data indicates HWC participants had an improved understanding of precarious work and its relationship to health; improved critical thinking and strategic planning skills; and ability to analyze power dynamics and identify potential allies. Notably, participating organizations described enhanced collaborating and networking relationships following the HWC.

**Practical Implications.** Results from the HWC were used to develop the next phase of the collaborative. HWC Phase 2 includes nine worker center, worker advocacy and/or union representatives paired with or working on public health or healthcare-centered policy and systems change initiatives. Case studies and dissemination projects, in addition to evaluation results, will build the evidence for approaches to address precarious work through multi-sectoral partnerships undertaking policy and systems change.

#### Occupational health risks in agriculture: An experience sampling investigation for public health disease control

*Mahima Saxena (Illinois Institute of Technology)*

**Problem.** Research in our field has explored health, well-being, and safety outcomes for workers (Tetrick & Quick, 2011). However, an examination of health and well-being for non-standard workers is limited. Such an examination in industries and cultural settings that are outside of typically WEIRD (western, educated, industrialized, rich, democratic; Henrich, Heine, & Norenzayan, 2010) "organizational" setups is even more rare. Recently, calls have been made to include workers that are outside of the mainstream (Bergman & Jean, 2015; Saxena, 2017) and represent work in unique and relatively understudied domains. For non-standard workers particularly, there is a high risk

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