

Hispanic Workers' Perceptions of Health and Safety at the Construction Site

Luz Stella Marín, MSc
Doctoral Student- Research Assistant
Department of Work Environment
University of Massachusetts Lowell

Introduction

Due to the dynamic nature the construction industry, workplaces are created and changed every day and along the day. Workers from the same and different employers; contractors and subcontractors; machinery, equipment, supplies and tools, and changing environmental conditions coexist throughout the project and influence the changing work environment. This dynamism creates daily challenges for construction projects, and even more for safety and health initiatives. The construction industry attracts a large workforce and especially Hispanic immigrants due to the availability of jobs, ease of entry, relatively high income, and limited need for experience and English literacy (Jaselkis et al, 2008).

In the United States, construction workers face higher work-related injuries rates than workers in other industries (Jorgensen et al. 2006). Construction also ranks among the five industries with higher work-related injury rates. In 2009 and 2010, the construction industry recorded an injury rate of 9.7 and 9.5 fatal work events per 100.000 full-time equivalent workers (BLS, 2011). Although, construction ranked fourth in these past two years in relation to injury rate; it still remains ranked number one in terms of number of fatal work injuries. In turn, Hispanics are disproportionately represented in the number of work-related fatal events and injury rates. Hispanic construction workers face higher risks in the worksite than their non-Hispanic counterpart (Dong and Platner, 2004). Hispanics' injury rate has gained special attention due to its increase in recent years. Many reasons have been put forward to explain the disparity including greater exposure to high risk tasks, inadequate training, discrimination, language barriers, and poor safety climate marked by intimidation and focus on job retention over safety. (Roelofs, et al, 2011)

Workers' perceptions of the worksite environment are critical to developing health and safety intervention programs. These perceptions influence the final success or failure of initiatives aimed to enhance workers' health and safety. Perceptions of health and safety priorities in the construction work environment may be evaluated with through the various components of safety climate. The present study assessed perceptions of safety climate by workers and contractors and supervisors with regarding to co-workers social support, quality of training, having a voice in the

workplace, fear to lose the job, or promoting safety over productivity. Understanding the most potent elements of safety climate can lead to effective interventions that improve health and safety outcomes in the construction industry.

Safety Climate and Construction

Safety climate refers to employees' shared perceptions, attitudes and expectations priority given to safety by the organization (Zohar, 2010; Cooper and Phillips, 2004). It is an employee's interpretation of the organization efforts to put in practice its safety policies, procedures and practices and its gaps in reaching it. Often, it is understood as a measurement of the "true safety" or "safety temperature" (Vinodkumar and Bhasi, 2009) because it allows to identify those attitudes or behaviors willing or unwilling promoted by the organization. Research in this field has linked perceptions of safety climate to safety performance and injury rates (Zohar, 2010; Gittleman et al, 2010). For instance, a comparison between two groups of workers with low- and high-injury rate showed that workers in the high-injury rate group exhibited negative perceptions of safety on their worksites (Gyekye, 2006).

Conceptually, safety climate evaluations and comparisons can be made by measuring the dimensions or elements which combined compose the organization safety climate. However, there is no consensus on what must be measured and how (Gittleman et al., 2010). Investigators have included elements such as safety over productivity, co-workers and supervisor-workers interaction, and organizational leadership style and have developed methods and scales to measure them (Larsson et al., 2003; Jorgensen et al., 2007; Grote et al., 2000; Cooper and Phillips, 2004).

Measuring and evaluating safety climate in the construction industry presents particular challenges due to its dynamic as a constant evolving worksite; short deadlines; variety of safety norms or priorities as consequence of multiple and diverse employers sharing a common work environment, and the culture of autonomy that has evolved from the trade and craft organization of work.

Methods

A quantitative survey tool was developed to assess safety climate perceptions in the Lawrence, MA area. The survey was conducted between June 2010 and May 2011 using a convenience sample of Lawrence area residents, construction workers' family members, construction workers, construction supervisors and contractors. Perceptions of safety climate were measured with 31 questions built on the relevant literature, findings from previous focus groups conducted by PenC during the assessment phase, and community input. Additional demographic questions included fluency in English, age, union status, years in the construction industry and years in the USA. Most surveys were conducted in Spanish in-person assisted by a trained interviewer. English surveys of contractors and Spanish-speaking union members were conducted by phone. Participation was voluntary and anonymous; each survey took approximately 15 minutes. All respondents agreed to participate via oral informed consent using protocols approved by the Institutional Review Board of the University of Massachusetts Lowell.

Results and Discussion

Demographic Analyses

A total of 234 participants completed the survey. Seventy two percent were males and 27% were females. The survey was conducted primarily in Spanish (96%), and face-to-face was the main method for administration (76%). A total of 107 construction workers completed the survey, with an average age of 40.2 years and a range of 19 to 63 years. Workers' average experience in the construction industry was 6.6 years and they had lived in average 12.6 years in the United States with range from 1 to 47 years.

	n	%
Total Participants	243	
Construction worker	107	44.0%
Lawrence Resident	67	27.6%
Construction Worker Family Member	43	17.7%
Contractor	11	4.5%
Supervisor	10	4.1%
Other workers	2	0.8%
Construction Workers Only	n = 107	
Unionized worker	45	42.1%
Non-unionized worker	27	25.2%
Unknown	35	32.7%
English Fluency		
High	26	24.3%
Medium	52	48.6%
Low	25	23.4%

Table 1. Respondents' characteristics

Safety Climate Elements

The survey instrument examined general perceptions of safety climate and measured six distinct elements. The elements were labeled as (a) employment and working conditions, (b) social support, (c) productivity, (d) safety education and training, (e) roles and responsibilities, and (f) retaliation.

Respondents were categorized into two groups according to job title: workers (unionized and non-unionized), and supervisors and contractors. Due to the small sample size, the data were analyzed using Kruskal-Wallis non-parametric for independent samples. To further examine the relationship between the job categories and both total safety climate and individual elements of safety climate, other variables such as English fluency, age, seniority and years living in the USA, were included in the analysis. Levels of significance were set at $p < .05$.

Perceptions of Safety Climate

Although both workers and supervisors perceived safety climate negatively in the construction industry; construction workers experienced a more negative perception than supervisors (31% and 47% respectively). Job title differences were statistically significant for all the factors ($p<0.01$). Workers had lower score across the whole safety climate elements. *Employment and work conditions* was the highest element among both workers and supervisors while *Retaliation* was recorded as the lowest.

Elements	Mean	Median	Safety Climate Score	
			Workers	Supervisor & Contractors
Total Safety Score	30%	28%	31%	47%
Employment and Working condition	49%	33%	54%	72%
Social Support	29%	20%	31%	46%
Productivity	17%	0%	14%	40%
Safety Education and Training	25%	25%	25%	36%
Roles and Responsibilities	49%	50%	49%	58%
Retaliation	9%	0%	7%	35%

Table 2 Safety Climate Scores

Previous studies have mentioned poor working conditions among likely causes of Hispanics' may be at greater risk for occupational fatalities (Dong and Platner, 2004). Regarding *employment and work conditions*, workers perceived less availability of the appropriated equipment for working at heights such as ladders, scaffolding, and harnesses. They were more disappointed with working conditions than supervisors which may find an explanation on supervisors' responsibility for providing safe equipment. In the same way, workers expressed more concerned regards to priority of *productivity* over safety than supervisors. They perceived the construction job as more prone to take risk or to respond to tight schedules to the detriment of safety. Regarding retaliation there was a considerable difference between workers and supervisors. It represented a substantial gap to be bridged in the workplace; both workers and supervisors were sensitive to workers' need to have a voice in the workplace without fear of losing their jobs. Thus, in order to contribute to reduce workers' hazards exposure, contractors must promote workers' participation as well as encourage workers to report hazards without fear of retaliation.

Conclusions

The construction industry is complex and challenging environment which demands special attention due to its high work-related injury rates. Hispanic construction workers experience higher risk to suffer no-fatal and fatal injuries in the construction sites. Deep analyses of Hispanic workers' safety and health perceptions may contribute to gain understanding of workers and environment interaction. Gaps identification provides substantial inputs which should be considered for designing effective safety and health workplace interventions aimed on the Hispanic workforce.

Acknowledgments

Data used in this analysis was part of Protección en Construcción project. Protección en Construcción (PenC): The Lawrence Latino Safety Partnership is a community-based participatory research project designed to identify opportunities and obstacles to falls and silica exposure hazard prevention on construction sites employing Hispanic workers in Lawrence, Massachusetts. PenC is a research project supported by the National Institute of Occupational Safety and Health (NIOSH) Grant #5R01OH008750.

Principal Investigators: Dr. Cora Roelofs, Milagro Grullón and Michael Gagliardi.

Co-Investigators: Dr. Susan Shepherd, Luz Stella Marín MS, Erick Nunez, Doris Anziani, and Ellie Parker.

PenC thanks Sunilda Pelguero, Eduardo Gonzalez, Ceferina and Juan Williams, members of PenC Outreach team, who assisted with data collection.

Bibliography

- Cooper, M.D., and Phillips, R.A. 2004. "Exploratory analysis of the safety climate and safety behavior relationship." *Journal of Safety Research*, Vol. 35, 497-512.
- Dong XS, Men Y, Ringen K. 2010. "Work-related injuries among Hispanic construction workers-evidence from the medical expenditure panel survey." *American Journal of Industrial Medicine* 53(6):561-569.
- Dong, X. and Platner, J. 2004. "Occupational Fatalities of Hispanic Construction Workers from 1992 to 2000. *American Journal of Industrial Medicine* 45:45-54
- Gittleman JL, Gardner PC, Haile E, Sampson JM, Cigularov KP, Ermann ED, Stafford P, Chen PY. 2010. "City Center and Cosmopolitan Construction Projects, Las Vegas, Nevada: lessons learned from the use of multiple sources and mixed methods in a safety needs assessment." *Journal of Safety Research*. 2010 Jun;41(3):263-81. Epub 2010 May 22.
- Gervais, M. 2003. "Good Management Practice as a Means of Preventing Back Disorders in the Construction Sector." *Safety Science*, Vol. 41, 77-88.
- Grote, G. and Kunzler, C. 2000. "Diagnosis of safety culture in safety management audits." *Safety Science*, vol. 34, 131-150.

- Gyekye, S. 2006. "Workers' Perceptions of Workplace Safety: An African Perspective." *International Journal of Occupational Safety and Ergonomics (JOSE)*, Vol. 12, No. 1, 31–42
- Jaselskis, E.J., Strong, K.C., Aveiga, F, Canales, A.R , Jahren, C.. 2008. "Successful Multi-National Workforce Integration Program to Improve Construction Site Performance." *Safety Science* 46 603–618
- Jorgensen E, Sokas RK, Nickels L, Gao W, Gittleman. 2007. "An English/Spanish safety climate scale for construction workers." *Journal of Industrial Medicine*, Jun; 50(6):438-42.
- Larsson S., Pousette, M., and Torner, M. 2008. "Psychological climate and safety in the construction industry-mediated influence on safety behavior." *Safety Science* 46, 405–412.
- Roelofs, C., Sprague-Martinez, L., Brunette, M. and Lenore Azaroff. 2011. "A Qualitative Investigation of Hispanic Construction Worker Perspectives on Factors Impacting Worksite Safety and Risk." *Environmental Health*, 10:84
- U.S. Bureau of Labor Statistics. 2009. "Census of Fatal Occupational Injuries Summary, 2009" (retrieved January, 2012). (<http://www.bls.gov/news.release/cfoi.nr0.htm>)
- Vinodkumar, M.N. and M. Bhasi,. 2009. "Safety climate factors and its relationship with accidents and personal attributes in the chemical industry." *Safety Science*, 47: 659-667
- Zohar D. 2010. "Thirty years of safety climate research: Reflections and future directions. Accident Analysis and Prevention." *Analysis and Prevention*, 42: 1517-1522.
- Zohar D. 1980. "Safety climate in Industrial Organizations and applied implications." *Journal of Applied Psychology*, 1: 96-102.