Communicating Hazards in a Multicultural Workforce

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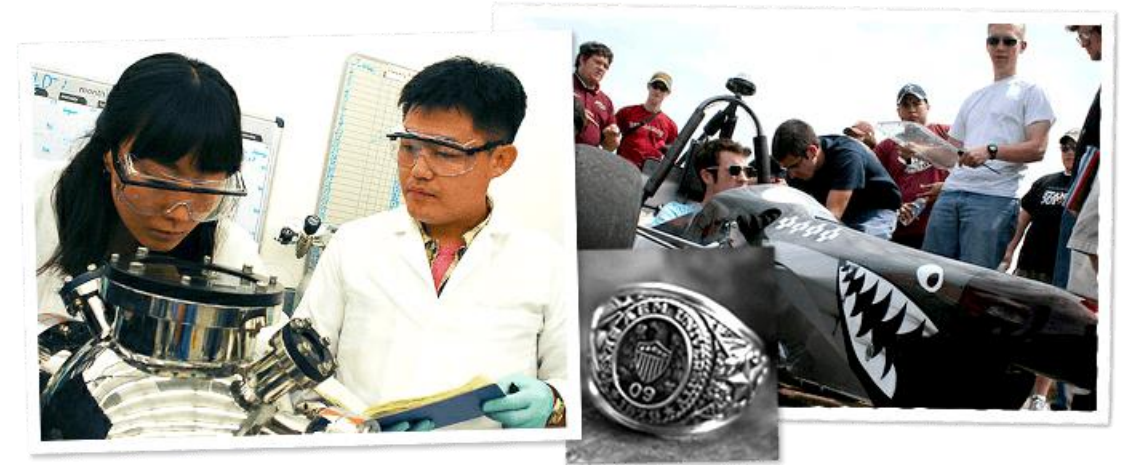Department of Psychology and MKOPSC at TAMU

Overview

- Mary Kay O' Connor Process Safety Center
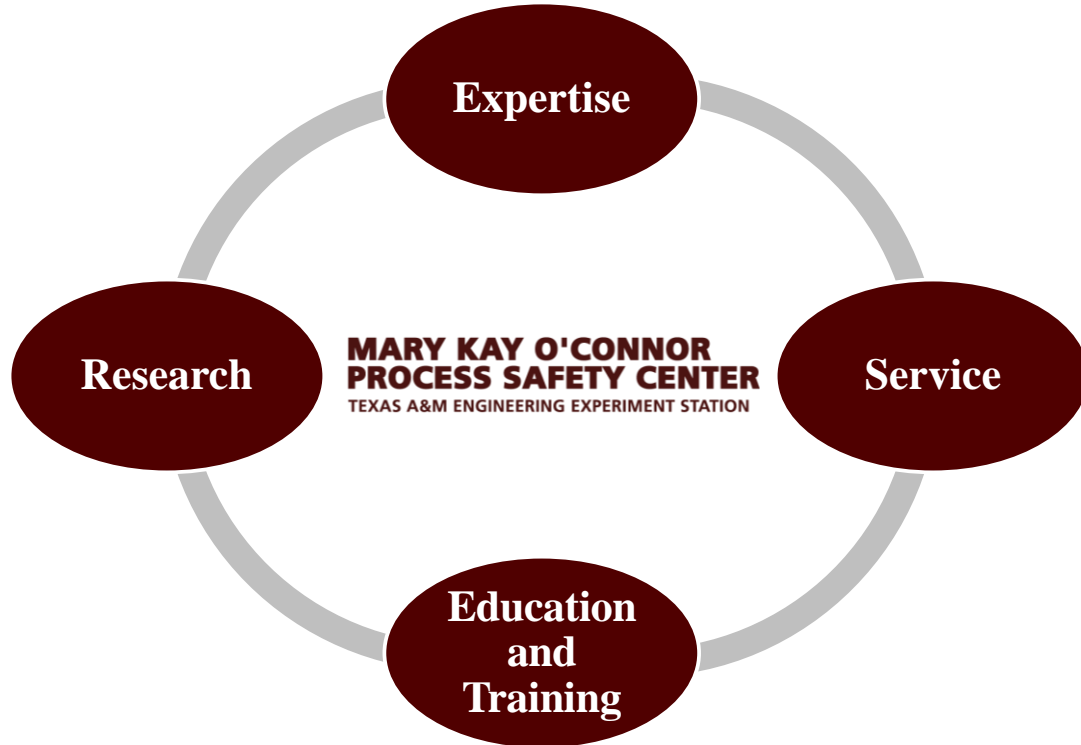
- Background

- Methodology

- Results and Analysis

Texas A&M University College of Engineering

- Part of Texas A&M University since its inception in 1876

- 14 departments.

- 500 faculty members

- 16,000 engineering students

Making Safety Second Nature

To be an international leader in minimizing losses within the process industry – through safer processes, management, equipment, and procedures.
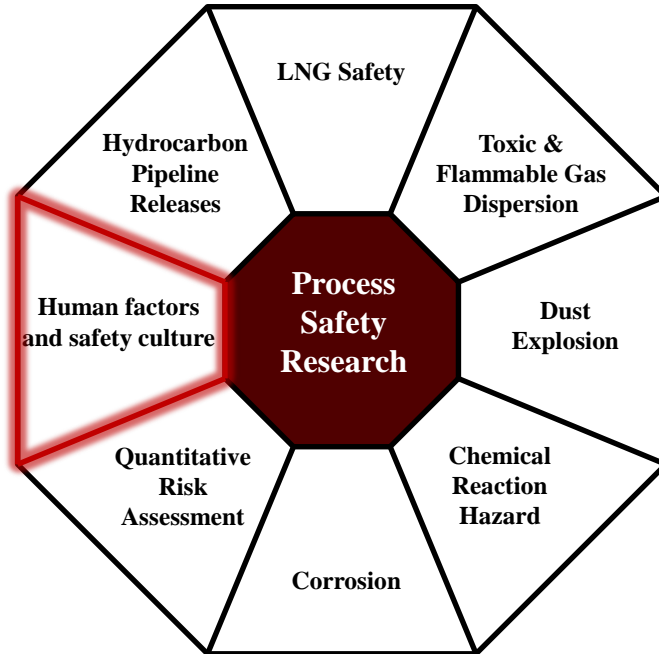

Center established in 1995 in memory of Mary Kay O'Connor (Chemical engineer and Operations Superintendent) who died in the 1989 Chemical plant accident- Pasadena, TX

Mary Kay O'Connor Process Safety Center

- Provide a national and regional **hub** of Process Safety expertise

- Provide the industry in the Middle East a **forum** for exchange of ideas, best practices, advances in proves safety

- Conduct **research** on process safety topic relevant to the region

- **Educate** a new generation of engineers in the region who have process safety as second nature

- **Train** personnel
  - Regulatory institutions
  - Industry
  - Universities

BACKGROUND

"Toward Better Safety Communication in a Multicultural Workforce"

Workforce Challenges

TEES | MKOPSC
MARY KAY O'CONNOR PROCESS SAFETY CENTER
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LIBERAL ARTS
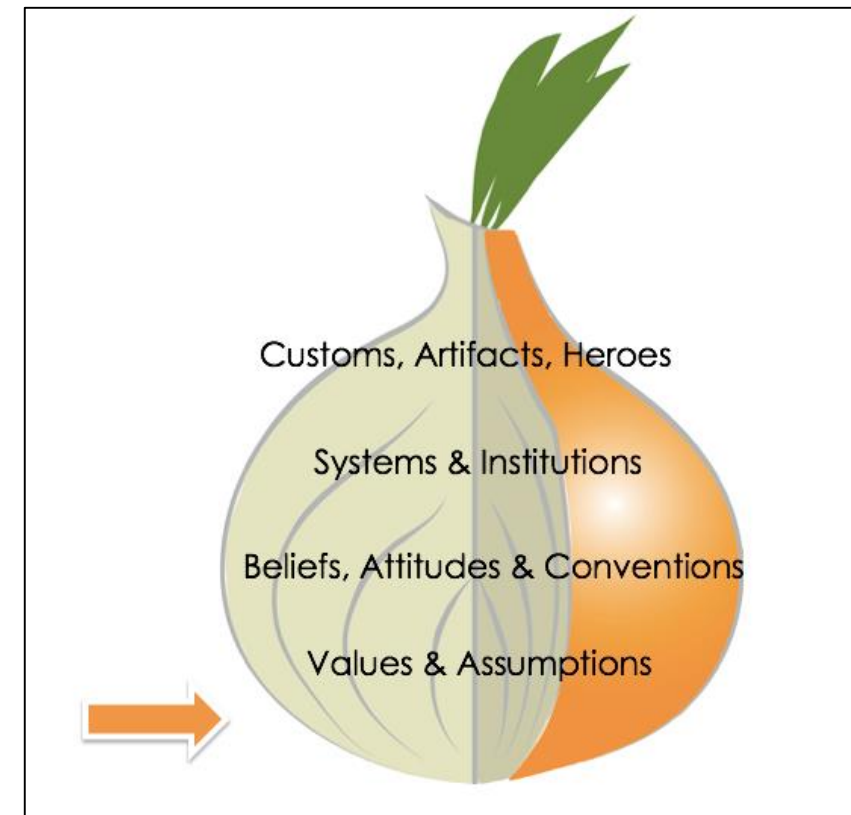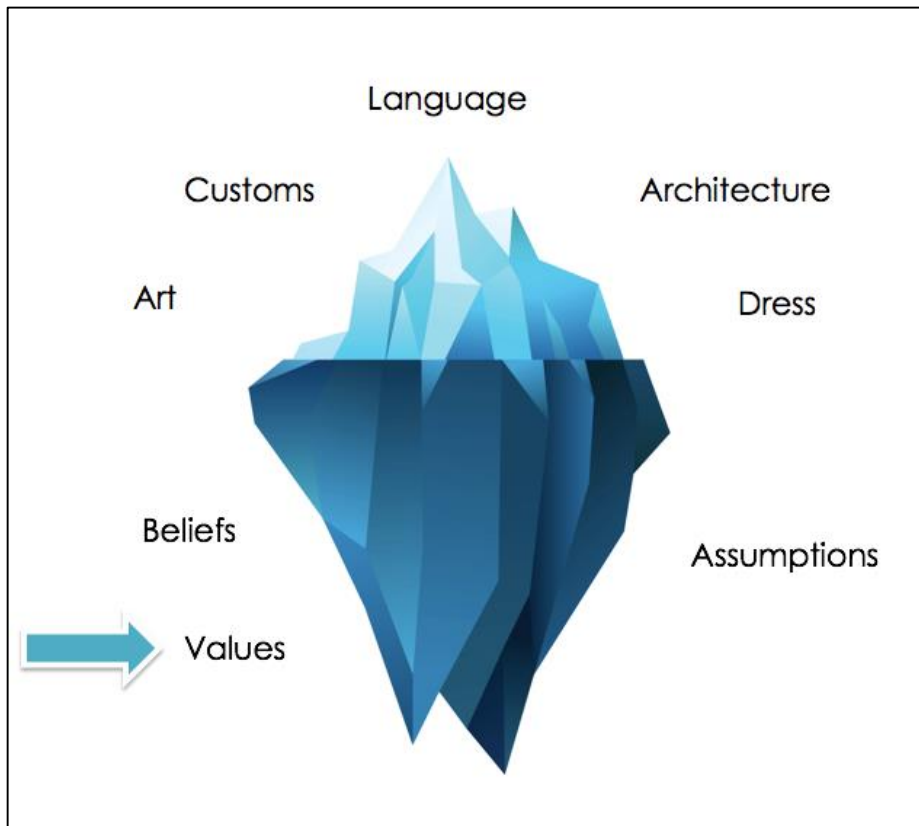TEXAS A&M UNIVERSITY
PSYCHOLOGY

- International corporations produce goods or services outside their home country
  - People from various nationalities and background work together

- Multinational workforces can experience communication challenges due to language barriers and cultural differences

- **National culture** influences communication and workplace safety

- **Communication** is critical to both personal and process safety

National Culture

- The collective programming of the mind that distinguishes the members of one group or category of people from others (Hofstede, 2001)
- "Software of the Mind"
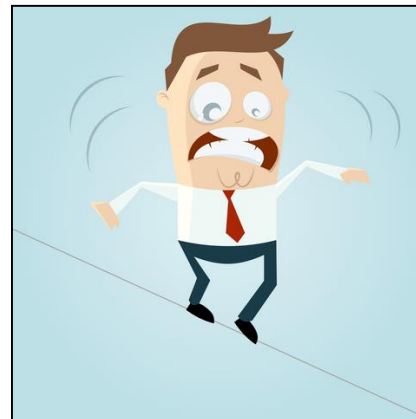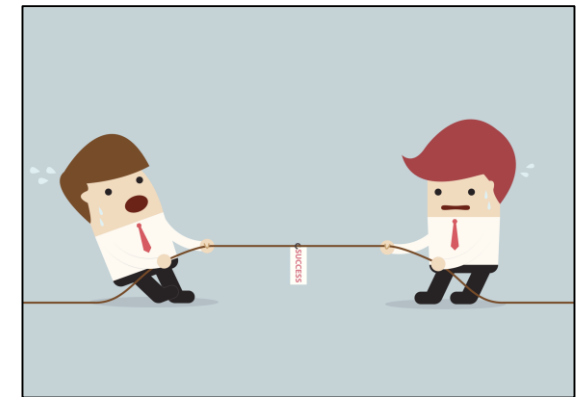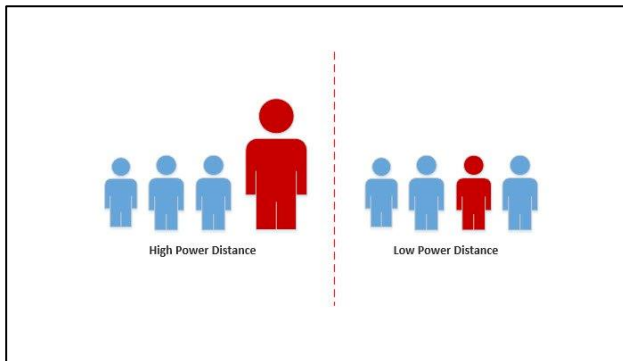
National Culture Dimensions

Individualism-Collectivism

Power Distance

Uncertainty Avoidance

Assertiveness

Long-term Orientation

Safety Communication Challenge

- An example of communication challenge one face in working with individuals from different cultures/nationalities

- Employees are apprehensive to point out an unsafe condition or behavior to a supervisor
  - There are numerous examples of co-pilots not pointing out a known concern to pilots in the aviation industry. This has been effectively addressed with crew resource management (CREW) training (Helmreich, Merritt, & Wilhelm, 1999)

Power Distance

How comfortable people are with speaking to authority figures

METHODOLOGY

Methodology

Administer pre-workshop survey to gain insights about current challenges at Company

Develop safety communication workshop tailored to the Company's needs

Conduct the workshop with a subset of the Company's workforce

Administer post-workshop survey to determine efficacy of the workshop

Survey Objectives

- Gain insights into safety-related communication challenges at the company
  - Gather information directly from employees
  - Identify strengths/areas for improvement

- Use the results in the development/assessment of a communication workshop
  - Provide baseline information about employees' standing on survey constructs

- Share results with company employees and management
  - Provide research-based, practical recommendations

Survey Constructs

- **Communication-Related Constructs**
  - Quality of Safety Communication
  - Safety Communication Encouragement
  - Clarity of Safety-Related Communication Comprehension
  - Global Communication Effectiveness

- **National Culture Dimensions**
  - Collectivism
  - Power Distance
  - Assertiveness
  - Uncertainty Avoidance
  - Long-term Orientation

- **Safety-Related Psychological Constructs**
  - Risk Propensity
  - Perceived Harm
  - Safety Climate
  - Safety Knowledge
  - Safety Motivation
  - Safety Compliance
  - Safety Participation

- **Self-Reported Injuries, Incidents, Near Misses (last 6 months)**

RESULTS AND ANALYSIS: SURVEY 1

Sample Demographics

Department

- Production
- Maintenance
- Technical Services
- HSE
- Administration
- Procurement
- Finance
- Supply Chain

80, 51%
33, 21%
22, 14%
6, 4%
7, 4%
4, 2%
3, 2%
1, 1%
2, 1%

Level

- Employee
- Supervisor
- Manager
- Senior Manager
- Other
- Missing

109, 69%
30, 19%
12, 8%
4, 2%
2, 1%
1, 1%

Nationality

- **Bangladesh (6)**
- **Burma (1)**
- **Egypt (3)**
- **India (166)**
- **Indonesia (7)**
- **Jordan (8)**
- **Malaysia (6)**
- **Pakistan (60)**
- **Palestine (2)**
- **Philippines (6)**
- **Qatar (35)**
- **South Africa (1)**
- **Syria (1)**
- **Thailand (1)**
- **United Kingdom (2)**
- **United States (1)**
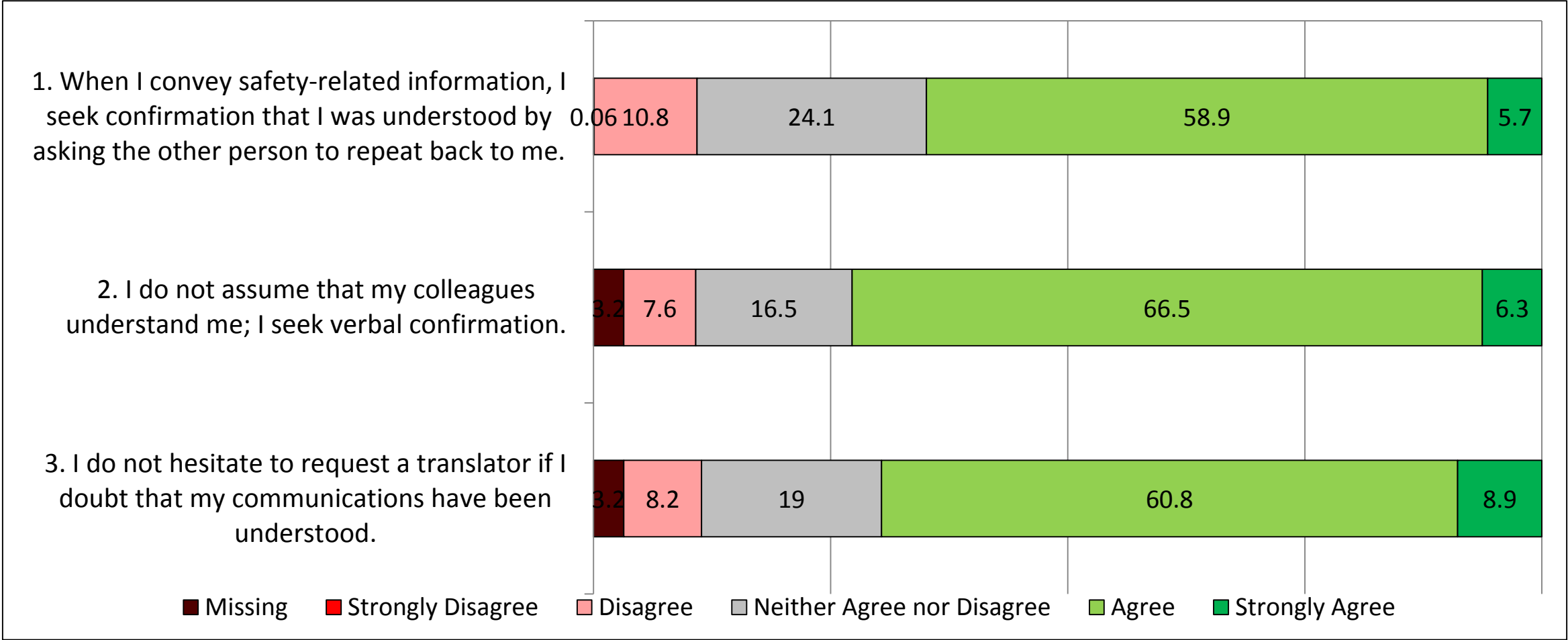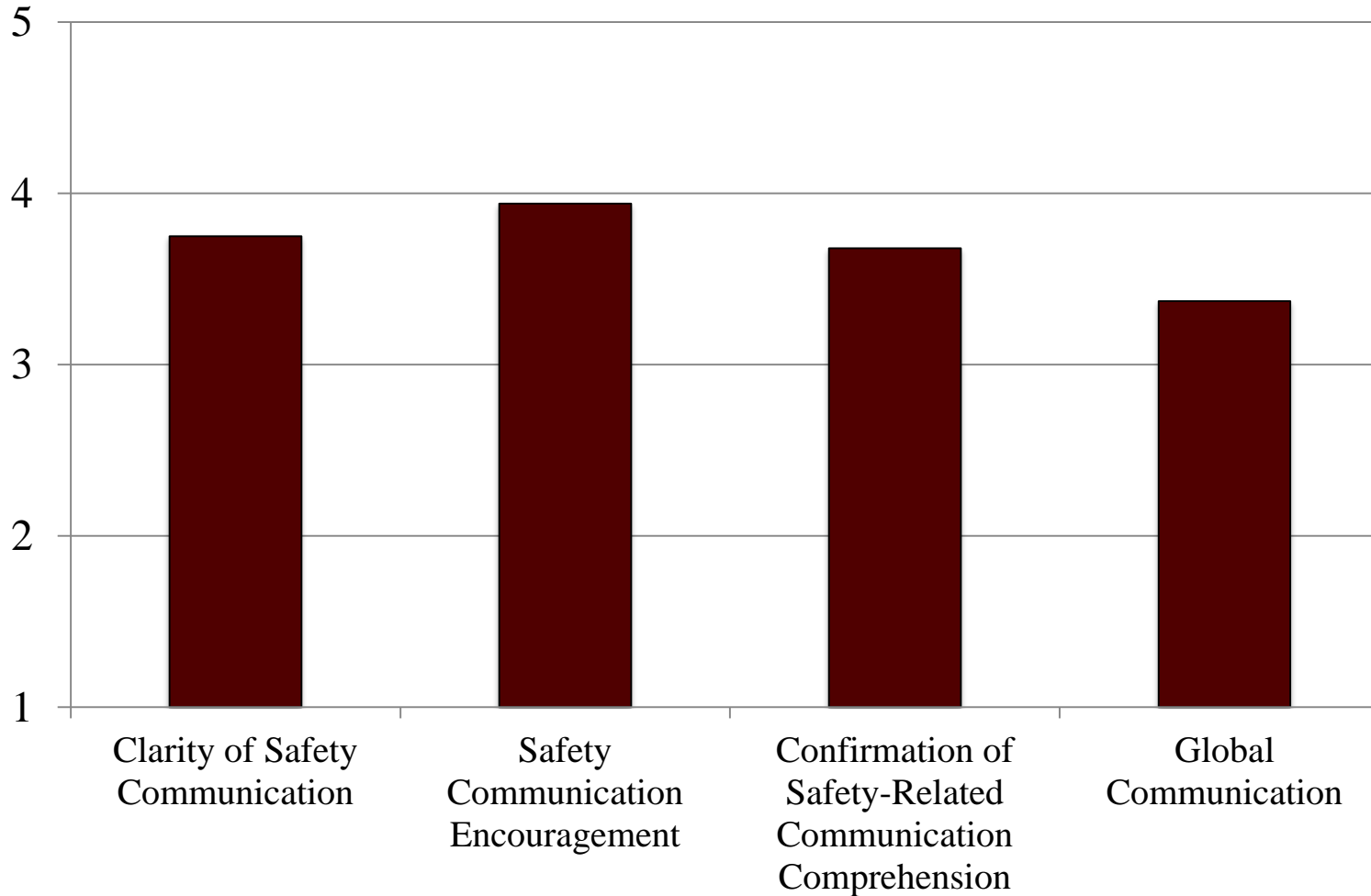
Clarity of Safety-Related Communication

	Missing	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. When I convey safety-related information, I seek confirmation that I was understood by asking the other person to repeat back to me.			0.06 / 10.8	24.1	58.9	5.7
2. I do not assume that my colleagues understand me; I seek verbal confirmation.	3.2		7.6	16.5	66.5	6.3
3. I do not hesitate to request a translator if I doubt that my communications have been understood.	3.2		8.2	19	60.8	8.9

■ Missing ■ Strongly Disagree □ Disagree □ Neither Agree nor Disagree □ Agree ■ Strongly Agree
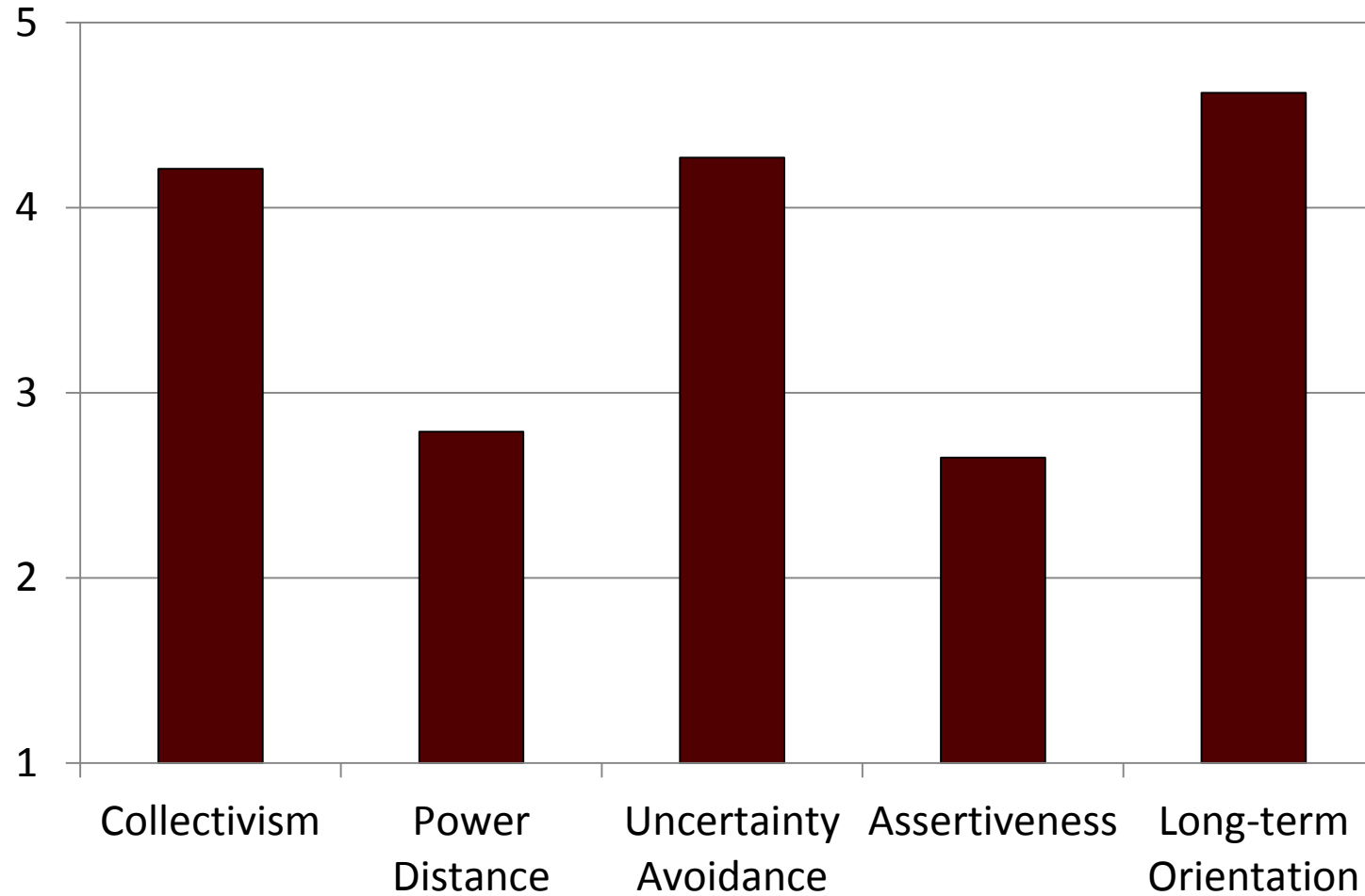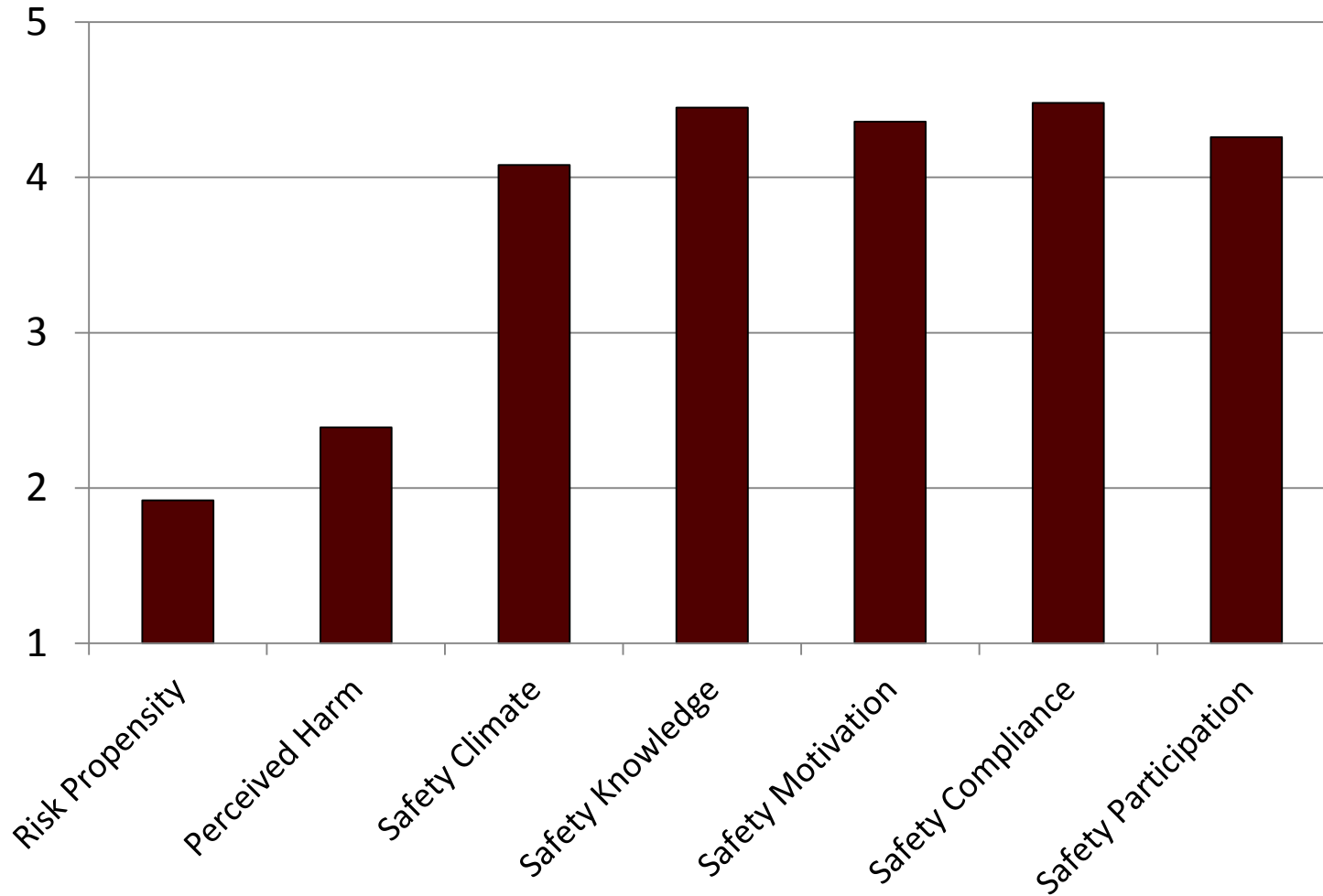
Workplace Safety Communication

1. **Clarity of Safety Communication** – Timeliness, accuracy, usefulness, and quantity of safety-related information

2. **Safety Communication Encouragement** – Encouraged and feel comfortable engaging in safety-related communications

3. **Confirmation of Safety-Related Communication Comprehension** – Ensure that safety communication is understood

4. **Global Communication Effectiveness** – Effectiveness of practices, procedures, and policies regarding cross-cultural communication

Cultural Dimensions

1. **Collectivism** – Interdependent vs. independent
2. **Power Distance** – Acceptance of social hierarchy
3. **Uncertainty Avoidance** – Follow strict rules and guidelines for behavior
4. **Assertiveness** – Dominance vs. social considerations
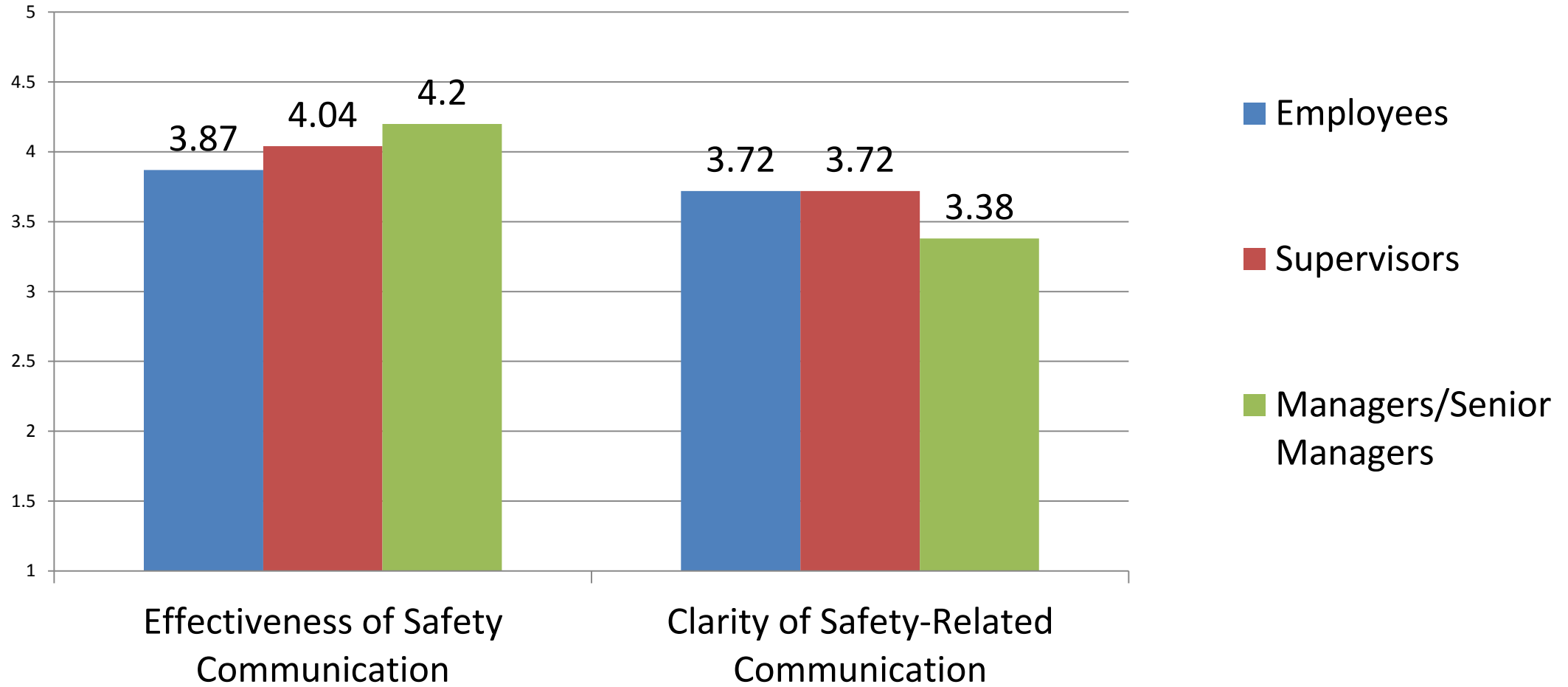5. **Long-term Orientation** – Future rewards vs. respect for tradition

Safety Constructs

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TEXAS A&M
UNIVERSITY.

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TEXAS A&M UNIVERSITY
PSYCHOLOGY

1. **Risk propensity** – Inclined to take risks, seek adventure, and engage in risky behaviors

2. **Perceived Harm** – Extent of job risk and beliefs about the effectiveness of controls

3. **Safety Climate** –The priority of safety

4. **Safety Knowledge** – Understanding of how to work safely

5. **Safety Motivation** – Willingness to exert effort to enact safety behaviors

6. **Safety Compliance** – Core activities to maintain workplace safety

7. **Safety Participation** – Efforts that support and improves workplace safety
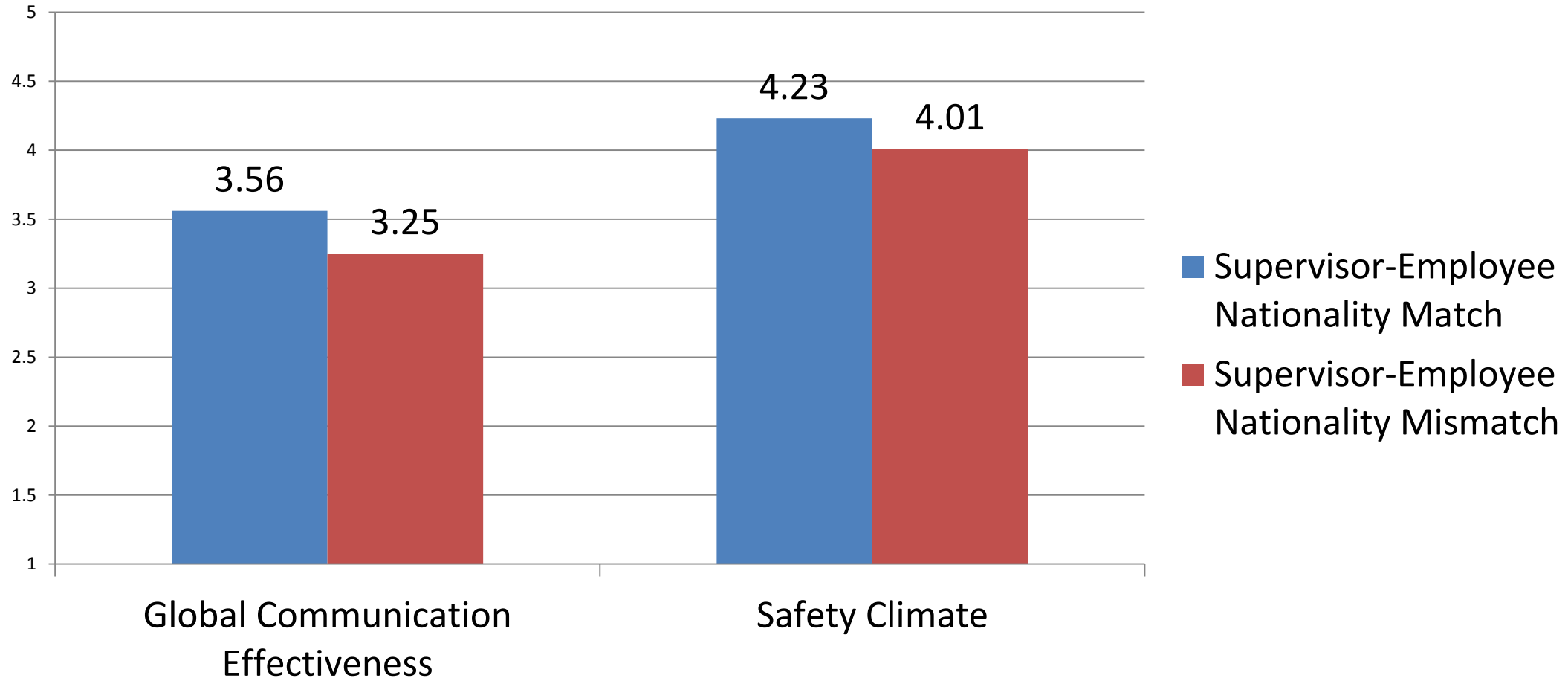
Comparison – Level of Employee

* $p < .05$

Comparison – Nationality

	India (N = 67)	Pakistan (N = 36)	Qatar (N = 11)	Other (N = 41)
Effectiveness of Safety Communication	4.05[a]	3.85[a]	3.98	3.84
Risk Propensity	1.89[a]	1.91	2.70[a,b]	1.82[b]
Perceived Harm	2.20[a,b]	2.51[a]	2.37	2.58[b]
Safety Knowledge	4.49[a]	4.49[b]	4.11[a,b]	4.43
Safety Motivation	4.43[a]	4.41	4.04[a]	4.28

Superscripts indicate significant differences $p < .05$

Comparison – Nationality Match

A bar chart comparing Supervisor-Employee Nationality Match (blue) and Supervisor-Employee Nationality Mismatch (red) across two measures:

- Global Communication Effectiveness: Match = 3.56, Mismatch = 3.25
- Safety Climate: Match = 4.23, Mismatch = 4.01

*$p < .05$

Summary/Recommendations based on Survey 1

1. **Promote safety communication**

   – Ensure that all employees feel comfortable speaking up about any safety-related concerns and reporting unsafe conditions, behaviors, and incidents without retribution

2. **Maintain and communicate a commitment to safety**

   – Continue to value and prioritize safety and communicate that priority consistently to all employees through resource allocation and never compromising safety for production

3. **Reward safe behavior**

   – Encourage supervisors to regularly acknowledge employees' safe behaviors and publicize these to the workgroup

4. **Offer safety training opportunities**

   – Monitor safety training needs and offer training and development opportunities when knowledge and skill deficiencies emerge

Work in Progress

- National culture – Safety Communication Workshop Delivered in July of 2017

- Survey 2 Administered in October of 2017

THANK YOU