Evaluation of the Foundations for Safety Leadership Training Module

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Acknowledgements

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Hao Treu
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Graduate students
FSL trainers

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Safety leadership

- Multi-dimensional construct
- Transformational leadership style most commonly studied
- Related to a variety of outcomes:
  - Safety climate
  - Safety practices (especially participatory practices)
  - Occupational injuries
Safety leadership intervention research

Prior intervention formats:
• No training, but on-going feedback on safety communication
• 1 / 3 / 20 / 180 day trainings
  • Lecture
  • 360 feedback
  • On the job practice
  • Worker involvement

Observed outcomes:
• Leader
  • Safety attitudes
  • Self-efficacy
  • Intentions to promote safety
  • Leadership practices
• Worker
  • Safety communication
  • Safety climate
Foundations for Safety Leadership
Foundations for Safety Leadership

• **3 Hour Training**
  • Foundational material (1 hour)
    • Cost of ineffective leadership
    • Benefits of effective leadership
    • 5 safety leadership skills, etc.
  • Applying skills (2 hours)
    • 7 real world construction scenarios
    • Animated videos, Reading, Role Plays
    • Discussion questions
FSL evaluation study

Compared to the group without FSL training, the group with FSL training will report better...

Leaders

• Understanding of the safety leadership skills
• Use of safety leadership practices
• Use of safety practices
• Worker reporting of safety-related conditions

Workers

• Leader’s use of safety leadership practices
• Safety climate
• Use of safety practices
• Their reporting of safety-related conditions

All on a 1-5 Likert scale
Study Recruitment

- Maximize generalizability
- Selection criteria for 20 companies: Geographic location, Risk, Union status, Business size
- Randomization into training group
Hierarchical linear regression to account for repeated measures

**Model 1:** Time

**Model 2:** Time + Intervention group + Time*Intervention group

**Data analysis**

1-week pre-training

1-week pre-training

FSL training

2-weeks post-training

2-weeks post-training

4-weeks pre-training

4-weeks pre-training

FSL training

2-weeks post-training

Control group analysis

Lagged FSL training

Sustained impact analysis

Early FSL training
### Sample Companies

<table>
<thead>
<tr>
<th>Geographic location</th>
<th>Early(#)</th>
<th>Lagged(#)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West (Denver area)</td>
<td>7</td>
<td>7</td>
<td>14 (70%)</td>
</tr>
<tr>
<td>Midwest (Pittsburgh, PA/Morgantown WV)</td>
<td>1</td>
<td>2</td>
<td>3 (15%)</td>
</tr>
<tr>
<td>Northeast (Boston area)</td>
<td>2</td>
<td>1</td>
<td>3 (15%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size (self-reported)</th>
<th>Early(#)</th>
<th>Lagged(#)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>2</td>
<td>3</td>
<td>5 (25%)</td>
</tr>
<tr>
<td>Medium</td>
<td>4</td>
<td>6</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Large</td>
<td>4</td>
<td>1</td>
<td>5 (25%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Union status</th>
<th>Early(#)</th>
<th>Lagged(#)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-union</td>
<td>6</td>
<td>5</td>
<td>11 (55%)</td>
</tr>
<tr>
<td>Union</td>
<td>4</td>
<td>5</td>
<td>9 (45%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trade risk level</th>
<th>Early(#)</th>
<th>Lagged(#)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
<td>7</td>
<td>2</td>
<td>9 (45%)</td>
</tr>
<tr>
<td>High risk</td>
<td>3</td>
<td>8</td>
<td>11 (55%)</td>
</tr>
</tbody>
</table>
Sample
Leaders and workers

Total Sample
286 Leaders & 1173 Workers

Response rate over time
- Leaders: ~80%
- Workers: ~60%

- Primarily white males
- 38 – 45 years old
- Leaders primarily foremen
- Workers primarily experienced workers
- With their leader an average of 3 months
Change in average leader-reported understanding of safety leadership skills before and after the FSL training by intervention group

Leader***

Early | Lagged
--- | ---
Before early group FSL training | After early group FSL training

**p < 0.01
Change in average leader- & worker-reported safety leadership behaviors of leader before and after the FSL training by intervention group

Leader**

<table>
<thead>
<tr>
<th>Predicted outcome scores</th>
<th>Before early group FSL training</th>
<th>After early group FSL training</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.9</td>
<td>Early</td>
<td>Lagged</td>
</tr>
<tr>
<td>4.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Worker

<table>
<thead>
<tr>
<th>Predicted outcome scores</th>
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<th>After early group FSL training</th>
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</thead>
<tbody>
<tr>
<td>4.9</td>
<td>Early</td>
<td>Lagged</td>
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<tr>
<td>4.7</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>3.7</td>
<td></td>
<td></td>
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<tr>
<td>3.5</td>
<td></td>
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</tr>
</tbody>
</table>

**p < 0.05
Change in average leader- & worker-reported safety practices before and after the FSL training by intervention group

**Leader***

<table>
<thead>
<tr>
<th></th>
<th>Early</th>
<th>Lagged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before early group FSL training</td>
<td>3.7</td>
<td>3.9</td>
</tr>
<tr>
<td>After early group FSL training</td>
<td>4.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Predicted outcome scores</td>
<td>4.5</td>
<td>4.7</td>
</tr>
</tbody>
</table>

***p < 0.01

**Worker**

<table>
<thead>
<tr>
<th></th>
<th>Early</th>
<th>Lagged</th>
</tr>
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<tbody>
<tr>
<td>Before early group FSL training</td>
<td>4.3</td>
<td>4.1</td>
</tr>
<tr>
<td>After early group FSL training</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>Predicted outcome scores</td>
<td>4.1</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Change in average leader- & worker-reported crew safety reporting before and after the FSL training by intervention group

Leaders:
- Early group: Before FSL training = 3.5, After FSL training = 3.7
- Lagged group: Before FSL training = 3.9, After FSL training = 4.1

Workers:
- Early group: Before FSL training = 4.3, After FSL training = 4.5
- Lagged group: Before FSL training = 4.7, After FSL training = 4.9
Change in average worker-reported safety climate before and after the FSL training by intervention group

Worker

Before early group FSL training | After early group FSL training

Predicted outcome scores

Before early group FSL training

After early group FSL training

3.5
3.6
3.7
3.8
3.9
4.0
Sustained impact

*Change from 2- to 4-weeks after*

**Leader**

- Safety leadership practices***
- Safety practices***
- Crew safety reporting***

**Worker**

- No change

***p < 0.01
Summary

• Leaders reported greater understanding and increased practice of safety leadership skills as well as safety practices at 2- & 4-weeks after the FSL training
  • No change amongst control group
• No change in worker-reported outcomes
Discussion

- Leader findings are consistent with previous safety leadership intervention studies

- Context behind FSL training design & future additional training components
In their own words...

- General reaction to training

- Inclusion of workers in the safety process

- On-going use of FSL training
Additional resources

• New scenarios
• Handbook & self-assessment
• Create your own scenario
• Spanish materials
• Toolbox talks
• OSHA master trainer slides
• Evaluation surveys
• Multi-media: Videos & infographics
Dissemination stats

• Downloads as of Aug 18’
  • FSL PowerPoint: 8,308
  • Instructor Guide: 3,452
  • TBTs: 2,767

• OSHA Ed Center FSL trainings as of Dec 17’
  • 601 FSL classes, reaching 6,611 students
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