



Leaders create culture: A safety culture training program for leaders in the construction industry

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Purpose: Develop and evaluate a safety culture training program for construction industry supervisors



Background

- The construction industry is characterized by dynamic hazards and production pressures. In 2012, 775 construction workers died on the job, which represents about 2 workers per day (BLS, 2013). Over the course of a 45 year career, a construction worker has a 75% likelihood of sustaining a disabling injury (Dong, 2011).
- Methods to take occupational health and safety to the next level should consider macro-level factors such as safety culture/climate.
- Safety climate:** Shared perceptions of company safety policies, procedures and practices. Meta-analyses link positive safety climate to safety outcomes (e.g., safety behaviors) (e.g., Christian, 2009).
- Supervisor's who exhibit safety leadership qualities are likely to positively influence the safety climate perceptions and personal safety behaviors of their crews.**



Source: Elcosh.org

Methods

Supervisor Intervention Components:

1. Workshop

- 4-Hours, interactive, customized to the construction industry, and in small groups of 12-15 supervisors focused on:
 - What safety culture climate is and why/how supervisors influence it.
 - Types of safety leadership styles: Passive → Active
 - Safety leadership components

2. Progress Checks

Determine progress towards becoming a better safety leader. Scheduled meetings between trainee's and trainee supervisors 1 time per month for 2 months to discuss goals set during training and the barriers to obtaining them.

Safety Leadership Components

- Always Communicate your value of safety to your crew frequently,
- Treat safety with the same priority as other organizational goals,
- Involve crews in safety analyses and pre-task planning,
- Voice your feedback when you see safe and unsafe behaviors,
- Empower crews to actively take on safety on the job.

Intervention Evaluation:

Design: Pre-post, non-equivalent control group design with one supervisor group receiving the workshop + progress checks (n=61) and the other (n= 59) receiving the workshop only.

Procedure: Supervisors (i.e., foremen, superintendents, project managers/engineers) and their crews (i.e., pre-apprentices, apprentices, and journeymen) filled out safety climate (Kines, 2011) and safety behavior (Neal & Griffin, 2000) questionnaires 1 month (n=300) before the intervention and 3 (n=462) and 6 (n=TBD) months after the intervention. Supervisors also completed safety climate knowledge questions at each time point and training transfer behaviors questions post training.

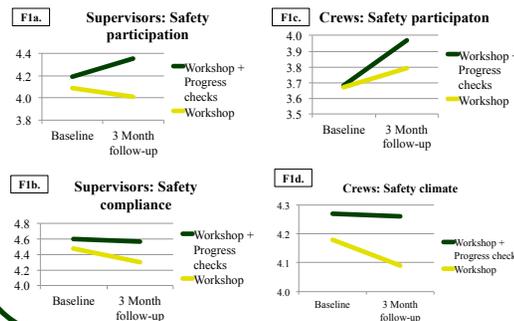
Study Design & Timeline

	Baseline	Workshops	Progress Checks	3-Month follow-up	6-Month follow-up
Intervention group 1:	✗	✗	✗	✗	✗
Intervention group 2:	✗	✗		✗	✗

Preliminary Results

- At baseline,** mean safety climate and safety behavior scores (compliance & participation) were not significantly different according to an independent samples t-test ($p > 0.05$) between both intervention groups among supervisors and crews (see Figures 1a-1f).
- Immediately post workshop: Reaction to workshop**
95% of trainees agreed that the training was relevant to their job, 92% agreed that it was engaging, 89% agreed they could apply what they learned on the job, and 94% agreed that they would recommend the training to others.
- 3-month follow-up: Safety climate & Safety behavior scores**
Among supervisors and crews, the group receiving the full intervention (workshop + progress checks) had significantly higher mean scores than the partial intervention group (workshop only). All means in Figures 1a, 1b, 1c, & 1d at follow-up are significantly different according to an independent samples t-test ($p < 0.05$). Supervisor's safety climate and crew's safety compliance behaviors were not statistically different at follow-up ($p > 0.05$) (Figures not shown).
- 3-month follow-up: Training transfer behaviors**
On a 0-5 strongly disagree to strongly agree scale, supervisors said they discussed with their supervisor (3.6/5.0) and co-workers (3.7/5.0) ways to apply material on the job, and the knowledge and skills they learned were used (3.95/5.0), found to be useful (3.99/5.0), and helped improve their job performance (3.88/5.0).

Figures F1a – F1d. Mean scores (0-5 frequency scale) at baseline and 3-month follow-up



Conclusions

- Preliminary results suggest that a leader focused safety culture/climate intervention composed of a workshop and progress checks results in more favorable safety climate perceptions and safety behaviors of both supervisors and their crews than an workshop only intervention.
- Supervisors who attend this type of safety culture/climate training may be able to gain the knowledge needed to positively influence the safety and health of construction job sites.**

Future Directions

- 6-month follow-up data was recently collected (October 2013). Changes pre-post intervention will be assessed via linear mixed modeling to determine differences in safety climate, safety behaviors, safety climate knowledge scores by intervention group and position within the company (supervisors vs. crews).

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