

# **Safety Leadership & Safety Climate: Improving Safety Performance**

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# A tendency for workarounds (at-risk behavior) under routine work

- BBS observations in 42 high-risk manufacturing plants (413 workgroups): only 19% of daily discussions and 66% of observable operations were safety-oriented by the companies' own rules → *44% at-risk behaviors* (Zohar & Luria, 2005)
- Failure to use protective gear provided at work accounts for 30% of lost workdays (WHO, 2010)
- ➔ Strong tendency for workarounds (at-risk behavior) under routine conditions (managers & workers alike)

*Where is it coming from & how can it be reversed?*

# Where is the tendency for workarounds coming from?

## *Background information*

- Most jobs can be successfully performed at different safety levels: Safety constitutes an independent, yet not-necessary performance dimension (i.e. an add-on).  
*Example: Drive more or less safely from A to B without accident*
- Safety entails investment of non-productive individual effort + org. resources, coupled with low injury chances
- Affects workers & managers alike: "won't happen to me"

## *Examples:*

- (a) Unit stoppage for preventive maintenance → extra production costs  
more costs
- (b) Invest \$ in machine guards /rusty pipe replacement →  
level → fall behind
- (c) Wait until pressure relief valve reaches required level → fall behind



***Workarounds: rational choice under ordinary (if risky) work: maximize gains at no immediate costs due to low injury chances***

## **Safety Climate as Best Predictor**

**Safety climate as measurable proxy of safety culture**

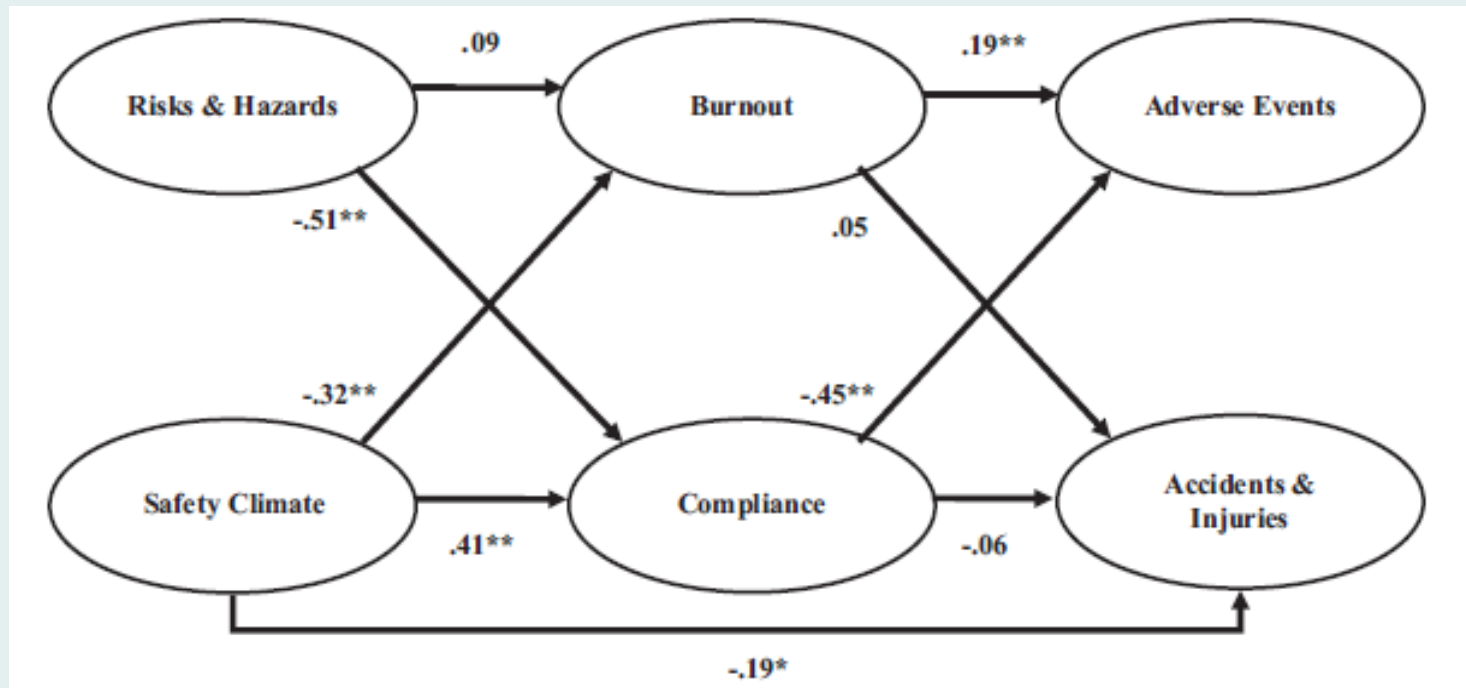
**Safety culture enhances safety engineering by influencing safety compliance (counteracting the tendency for workarounds)**

# Safety climate → safety compliance & injuries

Meta-analysis of 202 scientific studies (JAP, 2011)

Safety climate is a strong & reproducible behavior-based indicator:  $rc = -0.45$  (unsafe behavior);  $rc = -0.24$  (injury)

Risks & hazards (*engineering-based indicator*) relationships are weaker:  $rc = 0.12$  (unsafe behavior) and  $rc = 0.13$  (injury)



# What makes safety climate the best predictor?

Affects workers & managers behavior alike

- Workers & unit managers safety climate perceptions appraise org. reward structure, affecting choices of safe /unsafe behavior → counters the choice of workarounds
- Answer questions such as: (1) Is meeting deadlines more important than complying to safety rules? (2) Is it better for me to cut (safety) corners in order to work faster/cut costs?
- Whenever safety goals are (financially/socially) rewarded less than competing goals, a rational choice is at-risk behavior as long as the chances for injury remain low
- When everyone agrees about org. rewards for safety behavior, safety climate emerges (high vs. low scores), resulting in worker-level & management-level climates

# Measuring safety climate

**Scale items refer to observable indicators of safety priority:  
Priority → Expected rewards**

Employees discriminate between safety commitment & safety rewarding by senior vs. supervisory leaders

Worker-level climate scores are related (but not identical) to management-level climate scores

Scale items (Zohar & Luria, 2005):

*My supervisor-*

- *Refuses to ignore safety rules when work falls behind schedule*
- *Is strict about working safely when we are tired or stressed*

*Senior management -*

- *Quickly corrects any safety hazard (even if it's costly)*
- *Considers safety when setting production speed and schedules*

**How can safety climate be improved?  
Intervention strategies**



# Strategy 1: Safety leadership training

## Use leadership as leverage for safety climate change

- Effective supervisors do 2 things: frequent monitoring + offering timely consequences (rewards/criticisms)
- Goal setting boosts the effect of such acts: set specific & observable goals & offer incentives by goal progress
- Such skills can be trained in a half-day workshop: formal talks + (safety) scenario-based practice
- Top incentives at work: Financial (23%) = Social (21%); *Social* → *predictive recognition* + *immediate feedback*
- Discipline alone is least effective → org. mis-behavior

Safety goal examples:

(a) Use electrical isolated gloves; (b) Barricade a lifting area

# **Safety leadership training**

## **Half-day workshop**

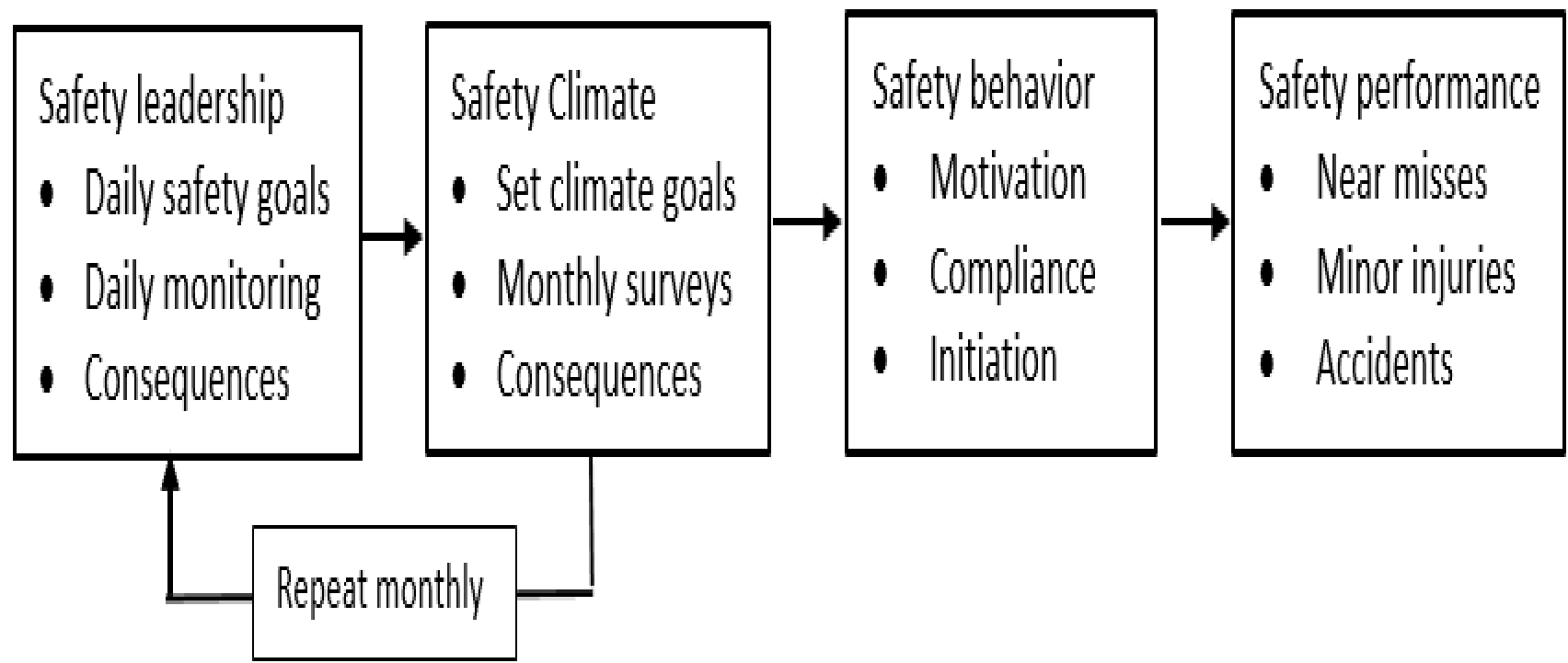
Use formal talks & scenarios combining generic with more specific safety rules during workshop to achieve the following objectives:

1. How to set daily (specific & observable) safety goals for performing today's work assignments (do's and don'ts)
2. How to schedule daily walk rounds to observe worker behavior & closeness to safety goals (scheduling app)
3. How to offer positive/negative feedback based on observed behavior + on-the-spot coaching for safety violations soon after completing each walk round

Strategy 1 duration: Workshops + before/after safety obs.

# Safety leadership → Safety climate

## Combine safety leadership & safety climate change



## **Strategy 2: Repeated climate surveys & goal setting**

### **Development of brief safety climate scales**

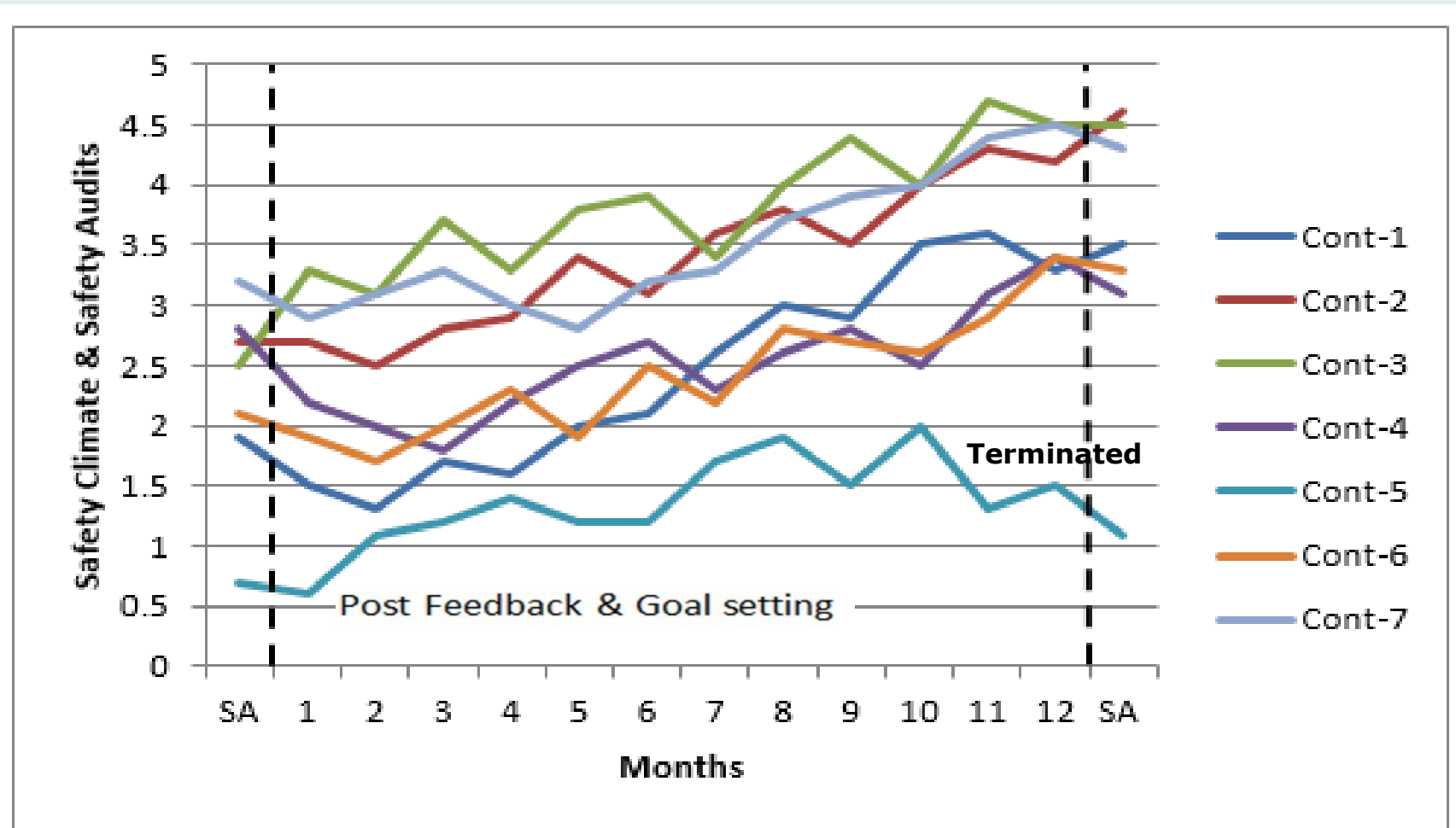
1. Use full-length climate scale to establish base-line score & analyze its data to develop a brief 10-item scale
2. Use brief scale for monthly data collection & managerial feedback, paired with setting of unit-level climate goals
3. Web-based data collection, using random & temporally separated employee sampling for each unit (>20%)
4. Monthly feedback (frontal or remote), accompanied by goal setting & rewarding goal progress or by on-line training/guides for climate improvement in poor units

Strategy 2 duration: up to 12 months (HSE mgnt. decision)

# AP chemicals: Monitoring sub-contractor safety climate

## Brief SC scales at monthly intervals (5-point scale)

Goal setting: 10% quarterly increase; Annual rewarding: 10% bonus



## Strategy 3: Increase daily safety messages

### Supervisor-worker conversations

- Given that most org. processes are discourse (speech) driven, climate perceptions often depend on safety messages embedded in daily work-related exchanges
- Challenge: Safety messages are weak & transient, *e.g. what has been said vs. what has been left out; text (explicit) vs. sub-text (implicit); formal vs. informal messages*

*Examples:*

*"Take a break if you're tired" (Safety)*

*"This job must be completed on time" (Speed)*

*"Can you tell Ben & Al about it tomorrow morning?" (Team)*

# Climate intervention project

Midsized heavy manufacturing plant (364 workers)

Zohar & Polachek, JAP, 2014

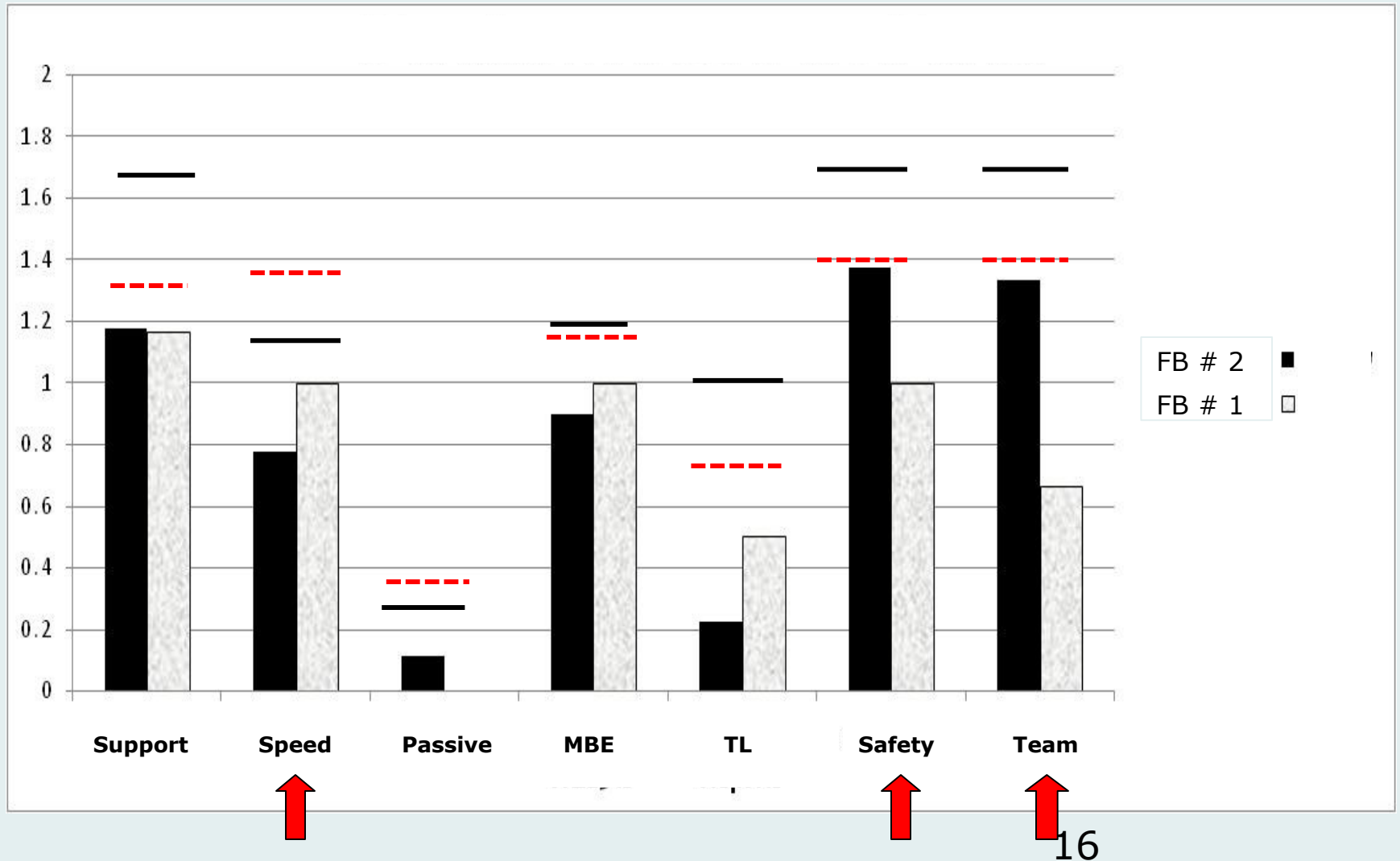
## Methodology

- Web-based/mobile apps to randomly select workers & send them brief checklist to spot supervisory safety vs. speed messages on last conversation (5 min)
- Use 7-9 exchanges to derive individual FB data per supervisor; Offer frontal/remote FB sessions
- Measure safety climate & safety behavior 2 months before & after project: Compare Exp & Control groups

Strategy 3 duration: up to 6 monthly FB sessions + before/after safety obs. (HSE management decision)

# Communicated messages during daily conversations

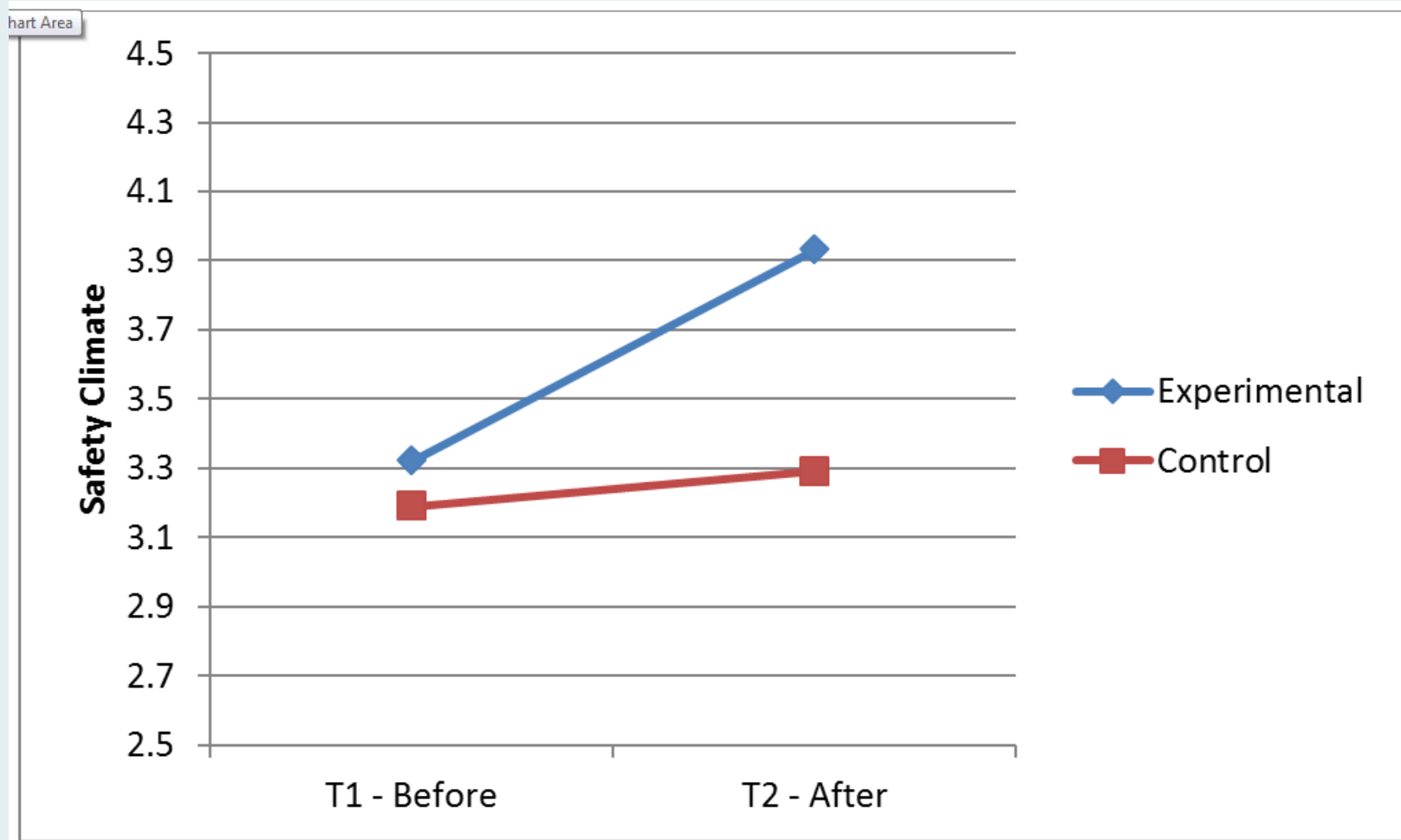
Message types + Individual goals (      ) + Org means (      )





# Effect of intervention on safety climate

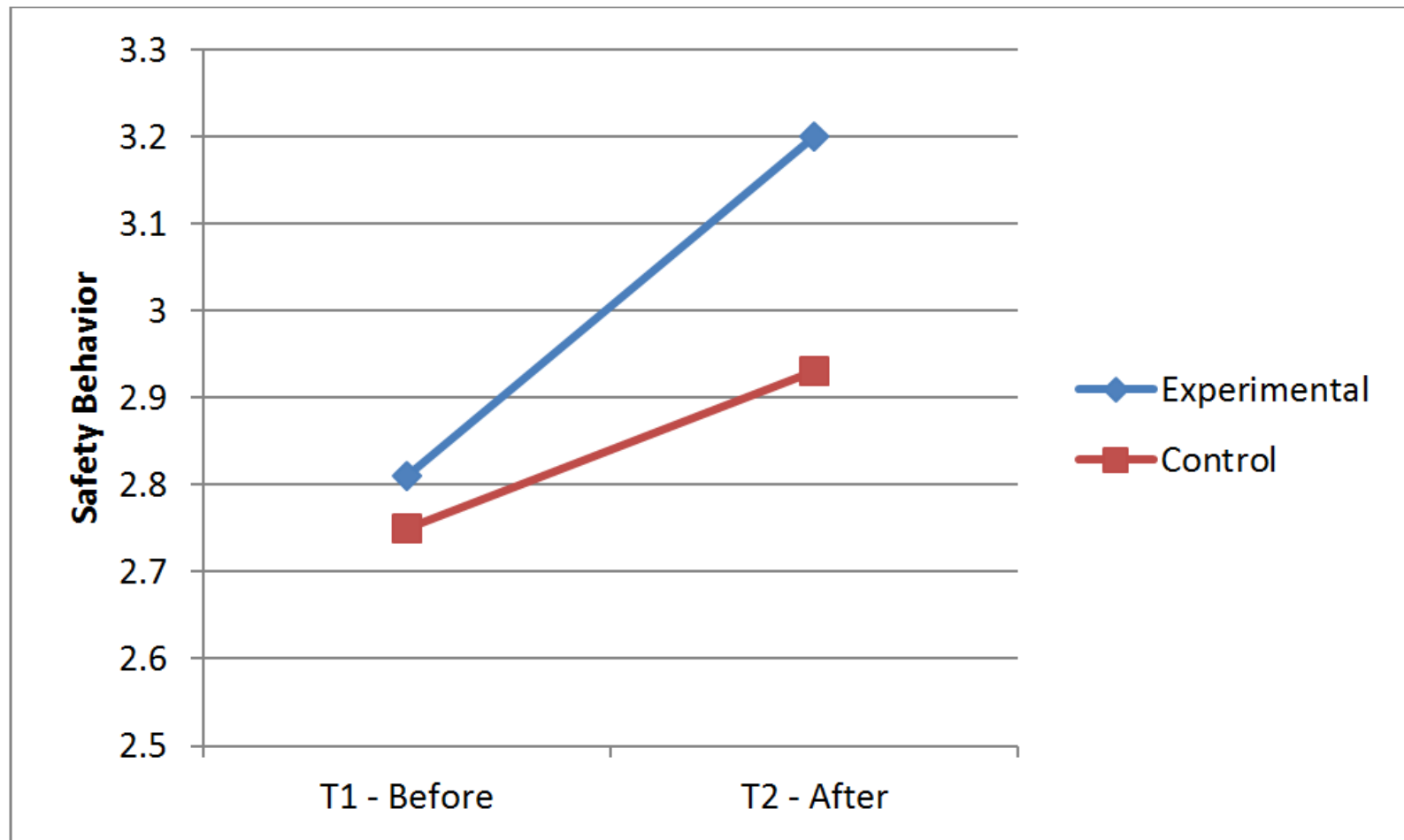
## 8 weeks before & after intervention



**Note: 14 Experimental & 14 Control workgroups**

# Effect of intervention on safety behavior

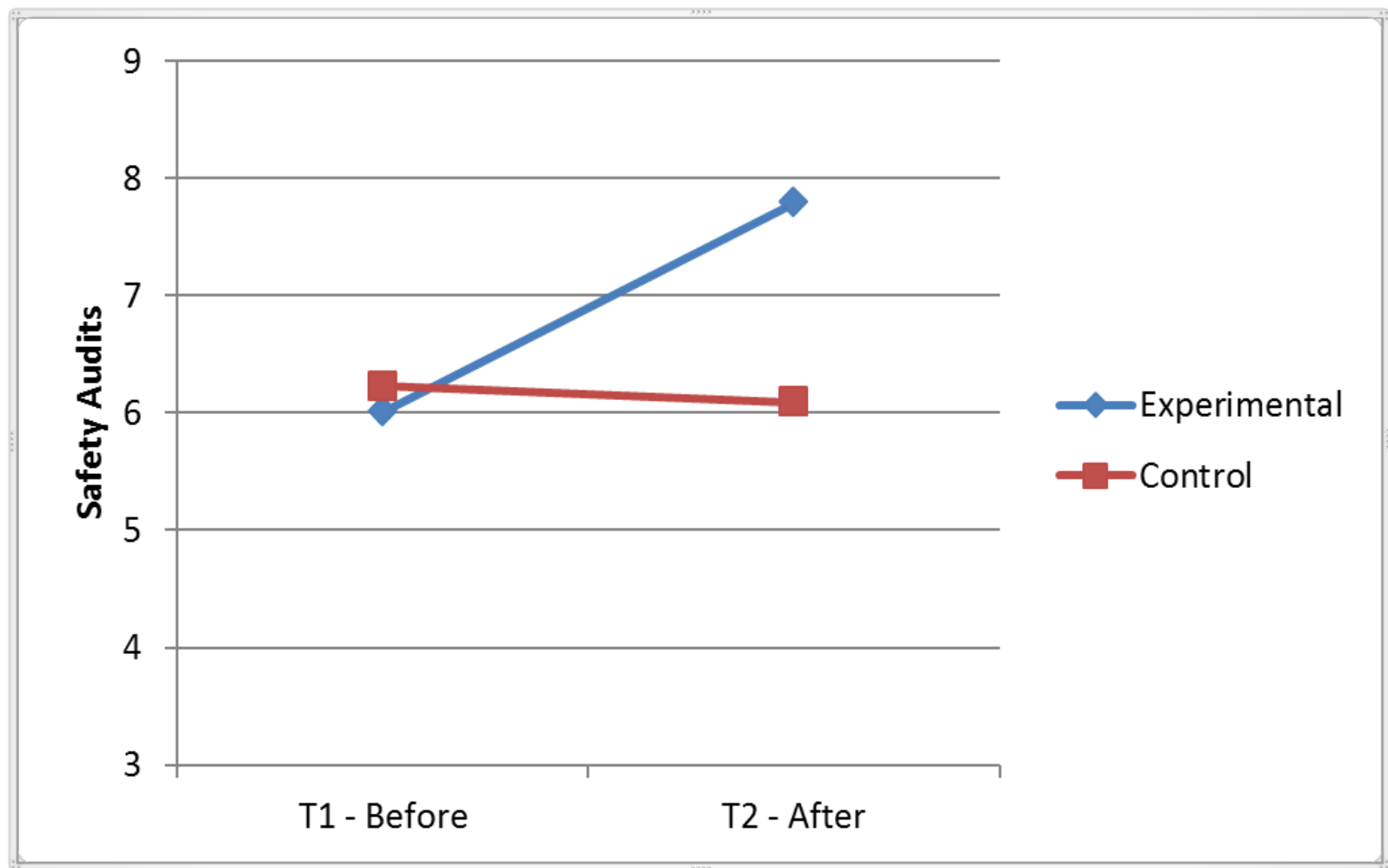
Scale: Griffin & Neal (2000)



*Note: Contrary to expectations, resulting from project methodology*

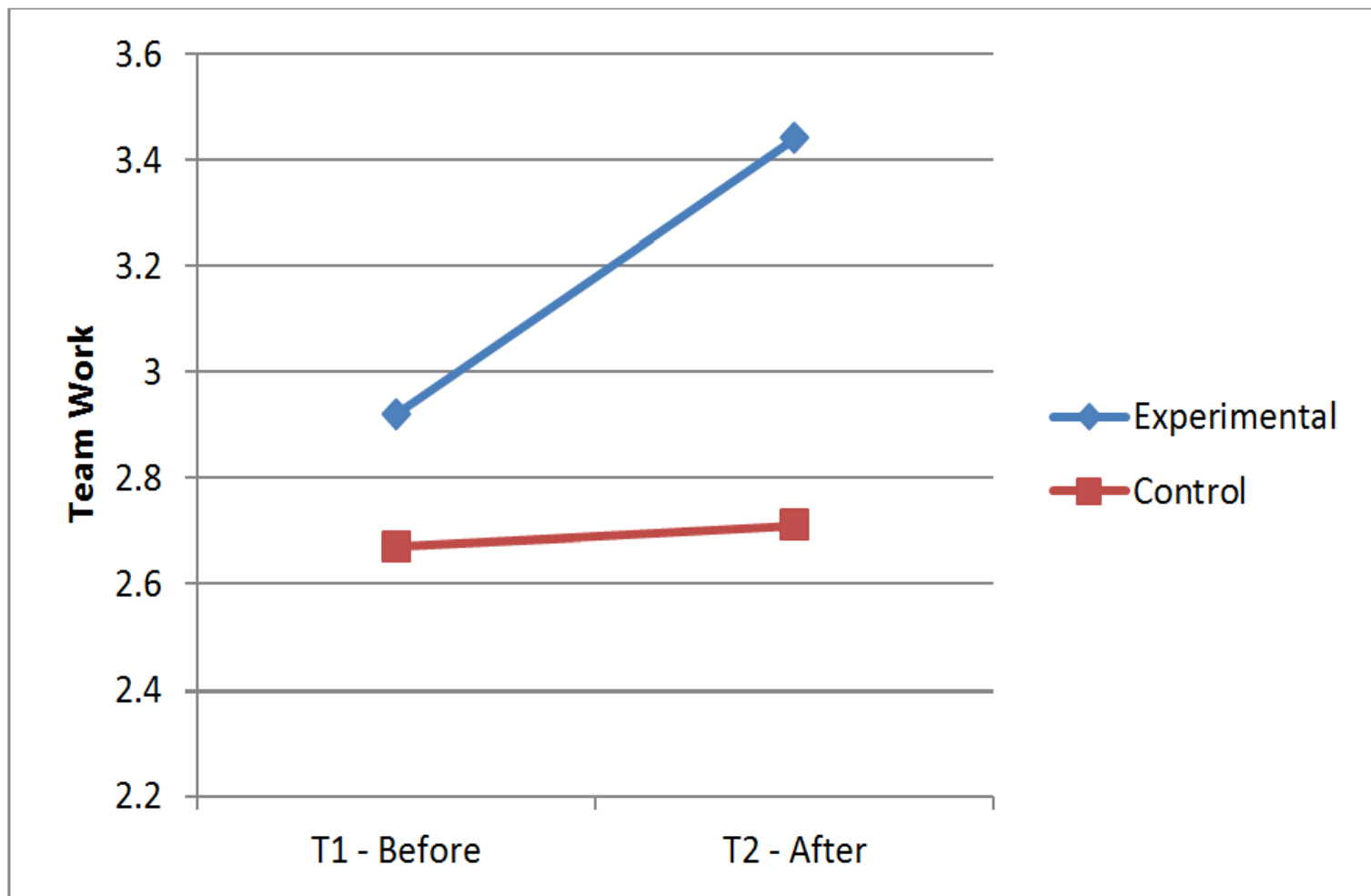
# Effect of intervention on safety audits

Use 2 double-blinded safety experts



# Effect of intervention on team work

Scale: Anderson & West (1998)



# Conclusions

- Safety climate as strongest factor affecting safety behavior can be used to improve corporate safety
- Intervention strategy: SC can be improved using: (a) repeated surveys + goal setting + FB/rewarding; (b) safety leadership practices (daily verbal messages or walk rounds) as leverages for change
- Cost-effectiveness: Safety interventions must be cost effective because of policy-practice de-coupling (safety increases production costs)
- My consulting mode: mentor corporate HSE managers rather than keep my expert knowledge to myself

**Thank you**  
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