



Lean, Psychological Safety, and Behavior-Based Quality: A Focus on People and Value Delivery

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Filling the Gap



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Quality, safety, and production issues



Rework, accidents, delays, cost overruns, and loss of trust

Insufficiently broad perspective on interconnected processes and overreliance on buffering



Influence of human factors in the design and success of construction processes

Trends We See Today



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The construction industry, while being highly complex, is moving towards increasing value delivery



Psychological Safety (P/S):
Essential for learning
organizations

Psychological Safety Evolution

Schein (1985): P/S as feeling safe in the context of change

- ↳ Kahn (1990): P/S as being oneself without fear of negative consequences
 - ↳ Edmondson (1990): P/S as a belief for interpersonal risk-taking
 - ↳ Gomez et al. (2019): P/S as a feeling based on assessments

Construction projects as a social unit



Impact trust and ability to discuss and define expectations, and commit to a well-defined scope

→ **Behavior-Based Quality (BBQ)**

Research Design



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Psychological
Safety (P/S)



Lean
Construction

Behavior-Based
Quality (BBQ)

- 1) Explore theoretical foundations and linkage between Lean, P/S, and BBQ
- 2) Illustrate findings
 - Interviews, questionnaire, observations
 - Various companies and roles

Lean and Quality



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Focus on quality has changed

Conformance to requirements (Crosby 1979)

Uniformity (Deming 1982)

Fitness for use (Juran and Gryna 1988)

No deficiencies (Juran and Godfrey 1999)

Satisfying customer's conditions of satisfaction (Ballard and Tommelein 2014; Spencley et al. 2018; LCI 2020)

Lean and Quality



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Respect for People

Factory model of management
→ Simple, controllable employee

A knowledge-intensive world
requires people who share
concerns, mistakes, and half-
formed ideas, speak up with
confidence, and ask questions

Language Action Perspective

A prerequisite for reliable
promises is that suppliers can say
“no” to a request (Ballard and
Tommelein 2016)

BBQ requires conversation where
expectations are articulated, and
shared understanding is achieved

Lean and Quality



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Respect for People

It requires each person be helped
to develop their capabilities

“you cannot, and should not, fool
the people” Crosby (1979)

→ Supports learning and
continuous improvement

Language Action Perspective

→ Clarity of requests and
commitments are key in the
planning process



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P/S and Quality

“top management should publish a resolution that no one will lose their job for contribution to quality and productivity”

Deming
(1986)

People might choose not to speak up, even though consequences can harm the team, in exchange for self-protection

Edmondson
(2018)

→ unhelpful or unhealthy behaviors

P/S and Quality



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P/S and Learning Behaviors

Quality concerns getting clarity
on work

P/S and BBQ

In building P/S, it is expected that
every member of the team takes
ownership of their contribution to
achieve quality

If teams are not able to move
things from unknown to known,
every day will likely have its
surprises

Lean, P/S, and BBQ

- Reliable promising can be understood as the basic process underlying BBQ, which focuses on people's behaviors
- The underlying behaviors for BBQ can be understood as those enabled by psychological safety
- Clients deserve to know exactly what companies have committed to deliver and must receive exactly that

In Practice: Respect for People



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P/S fosters respect for others and builds environments of mutual, measurable, authentic care where interpersonal risk-taking is welcome

P/S facilitates active and open participation in process design and ownership of operations

“bringing in craftspeople allowed us to incorporate their constructability suggestions. In some cases, they suggested solutions that exceeded what we thought they could do ...”

In Practice: Understanding Value Beyond Requirements



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Approaches that focus only on satisfying requirements fail in recognizing:

- 1) the ability of stakeholder's leadership to facilitate a process that supports psychological safety, and that
- 2) plans and specs might not be totally accurate, complete, or might not clearly express client expectations

“that's only like 3 words in the specs [referring to bench welding details], but that's the very first thing they went to [architects when reviewing]”

In Practice: P/S in Construction Projects

→ P/S can shape project participants' interaction and make the difference between:

Getting a common understanding
about expectations



Discovering problems
and defects

→ People from different backgrounds get together and collaborate within and among teams in a fast and changing environment

How to foster an environment where this can occur?

Conclusions

- Lean, P/S, and BBQ: A common pursuit and means to deliver value
- Lean: Customer as a priority. Construction is a multidisciplinary industry with high dependency among players
- Lean, P/S, and BBQ: All lead to or require respect for the individuals. With “respect for people,” you see an increase in productivity, higher quality, and more open conversations
- If teams apply Lean, opening a work environment of P/S where BBQ can flourish, achieving the expected outcomes would be more likely

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