


What Do We Know About the Psychology of Lean?

William K. Balzer, Erin Smith, Katherine Alexander

Department of Psychology, Bowling Green State University, Bowling Green, Ohio



ABSTRACT. Conclusions on the impact of “Lean” practices on employee perceptions, attitudes, and outcomes are limited, providing little guidance for organizations contemplating adopting this increasingly popular organizational intervention. Three challenges are noted: the lack of consensus on both conceptual and operational definitions of Lean, lack of psychological-based theories or models hypothesizing how Lean programs influence the workplace and employees’ perceptions, attitudes, and behaviors, and the lack of methodologically sound studies examining the effects of Lean programs. New directions are proposed for each challenge discussed.

CURRENT MAJOR CHALLENGE #1

The “Construct” of Lean:

Defining and Implementing Lean Programs

- Lack of consensus on a conceptual definition of Lean**
- Lack of consensus on an operational definition of Lean**

Table 1. Evaluation of the Implementation of the “Lean Construct” Across Key Studies

	Inclusion/Adequacy of the Conceptual Definition of the Lean Construct	Comprehensiveness of the Operational Definition of Lean	Measure of Degree of “Leanness”
Anderson-Connolly et al. (2002)	N	N	N
Bayou & de Korvin (2008)	Yes	N	Yes
Conti et al. (2006)	Yes	Yes	Yes
Parker (2003)	N	N	N
Shah & Ward (2007)	Yes	N	Yes
Sprigg & Jackson (2006)	N	N	N

Note. Yes = Fully satisfied in the article; N = Not satisfied in the article

PROPOSED NEW DIRECTION

- Adoption of Liker (2004) framework as a conceptual definition of Lean: *Philosophy, Process, People & Partners, & Problem Solving*
- Modify Shah & Ward (2007) self-report “Leanness” scale to fit Like framework for broader range of organizations
- Collect self-report “Leanness” scale responses from multiple organizational responses

CURRENT MAJOR CHALLENGE #2

A Conceptual Framework: The Impact of Lean on the Psychology of Work

- Lack of model/theory to predict how Lean practices influence employee well-being and organizational performance**
- Lack of model/theory to select interventions to strengthen impact of Lean practices on well-being and performance**

- Table 2. Evaluation of Existing Models of Lean on “Psychology of Lean” Criteria

	<i>Wall et al. (1990)</i>	<i>Conti et al. (2006)</i>	<i>Young (1992)</i>	<i>MacDuffie (1995)</i>	<i>Mehta & Shah (2005)</i>
1. The inclusion of all potentially important constructs related to inductively or deductively identified workplace perceptions, attitudes, and behaviors	?	?	?	N	?
2. The inclusion of all potentially important constructs related to inductively or deductively identified relevant individual differences	N	Yes	Yes	N	N
3. The inclusion of workgroup constructs that may directly or indirectly influence Lean operational management practices, the requirements of the job, and relevant individual, group, or organizational-level outcomes	N	Yes	?	?	Yes
4. The inclusion of organizational constructs that may directly or indirectly influence Lean operational management practices, the requirements of the job, and relevant individual, group, or organizational-level outcomes	N	N	Yes	?	Yes
5. The inclusion of external environment constructs that may directly or indirectly influence Lean operational management practices, the requirements of the job, and relevant individual, group, or organizational-level outcomes	N	N	Yes	N	Yes
6. A causal framework that integrates the relations among this broad set of constructs, providing predictions of the impact of Lean operational management practices on employee perceptions, attitudes and behaviors on employee well-being and organizational performance	N	N	N	N	Yes
7. A causal framework that integrates the relations among this broad set of constructs, providing potential interventions to improve these outcomes in organizations that have implemented Lean practices	N	N	Yes	N	N
8. The availability of existing empirical evidence to support use of the proposed model	?	Yes	N	Yes	N
9. The ongoing accumulation of results from well-designed studies that will lead to support, refinement, or abandonment of the model	N	N	N	N	N

Note. Yes = Fully satisfied in the model; ? = Limited development in the model; N = Not included in the model

PROPOSED NEW DIRECTION

- Adoption of Katzell & Thompson (1990a) integrated model of work attitudes, motivation, & performance as a framework for the “psychology of Lean”**
- Application of Katzell & Thompson (1990b) as guidelines for choosing organizational interventions to strengthen impact of Lean practices on well-being and performance**

CURRENT MAJOR CHALLENGE #3

Methodological Limitations in

Assessing the Effects of Lean Programs

- **Limited inferences of causality due to weak research designs: Threats to construct, internal, statistical conclusion, and external validity**
- ***Three major concerns with existing research studies***
 - *Prevalence of cross-sectional, non-experimental designs*
 - *Sampling limitations & representativeness of organizations studied*
 - *Limitations in assignment to treatment conditions*

Table 3. Evaluation of Validity Evidence in Key Studies to Support the Causal Effects of Lean Programs

	Construct Validity: Adequate measurement of workplace perceptions, attitudes, & outcomes	Internal Validity: Research design adequate to test causal hypotheses	Internal Validity: Random assignment of individuals, work units, or organizations to research conditions	External Validity: Representative sampling of employees, work units, or organizations
<i>Anderson- Connolly et al. (2002)</i>	Yes	N	N	?
<i>Birdi et al. (2008)</i>	Yes	N	N	N
<i>Conti et al. (1996)</i>	?	N	N	Yes
<i>Jackson & Mullarkey (2000)</i>	Yes	N	N	N
<i>Lee & Peccei (2008)</i>	Yes	N	N	N
<i>MacDuffie (1995)</i>	?	N	N	Yes
<i>Parker (2003)</i>	Yes	N	Yes	N
<i>Shadur et al. (1995)</i>	Yes	N	N	?
<i>Sprigg & Jackson (2006)</i>	Yes	N	N	?

Note. Yes = Generally adequate; ? = Mixed or unclear; N = Generally inadequate

PROPOSED NEW DIRECTION

- **Greater emphasis on reducing threats to internal validity**
- **Expanded use of multi-level designs in Lean research**
- **Application of rigorous statistical analyses when longitudinal designs are not possible**
 - *Path analysis*
 - *Structural equation modeling*