
Evaluating Leadership Development in an R&D Context: Assessing Alpha, Beta, & Gamma Change

S. Bartholomew Craig

Clara E. Hess

Jennifer Lindberg McGinnis

North Carolina State University

Background

- There's a widely accepted assumption that effective leadership is a key to CRC success but...
- Center Directors face a unique leadership challenge in that they must
 - Span boundaries across diverse constituencies (e.g., private and public sectors)
 - Coordinate the work of experts outside their own fields
 - Motivate others over whom they have little formal authority
 - Build and maintain climates to support creativity and innovation
 - Remain accountable to externally imposed operating guidelines
 - Achieve objectives within time-limited organizational lifespans
- As a result, previous leadership research is only partially applicable to this population.
- Research is needed that specifically addresses leadership of CRCs.
 - Coberly (2004): leadership predicts satisfaction and indirectly organizational commitment among faculty

Project Objectives

- Develop, implement, and evaluate an R&D-specific leader development intervention
- Donate standardized 360° feedback tool to the field to support future research and development efforts

Method

- Structured interviews of directors + constituents, content analyzed for performance dimensions
- Develop a tailored 360° feedback tool
- Use new tool in a feedback-based intervention
- Evaluate leaders' change over a 3-6 month period
- Refine instrument and release

Sample Interview Response: Technical Expertise

“You’ve really got to have a lot of talent. You’ve got to understand the technology, for one thing. Even though some of the technology is pretty far away from your original training. You have to teach yourself some of these things because you’ve got to know what’s going on in the center. That’s tough.”

Sample Interview Response: Abrasive

“...all it takes is locking horns one time with a stubborn uninformed dean and you're in deep trouble. And you know it doesn't matter then—you can be worth, you know, 20 million dollars to the university and if you just tell the dean off, because of your impatience with their stupidity or with their failure to understand what you're doing, then you're toast because they will block you at every turn and they have that power and they exercise it and it's naive to think they don't, because they do.”

Director Performance Dimensions

- Interpersonal Skill
- Networking
- Embracing Ambiguity
- Broad Thinking
- Team Building & Maintenance
- Ambition & Productivity
- Ethics & Fairness
- Technical Expertise
- Obtaining Resources
- Navigating Bureaucracy
- Task Adaptability
- Balancing Competing Stakeholders
- Fostering Creativity
- Abrasiveness
- Disorganization
- Conflict Avoidance

Sample 360° Items

R&D Leadership Assessment - Windows Internet Explorer

http://iopsychology.chass.ncsu.edu

R&D Leadership Assessment

R&D Leadership Assessment

Instructions

The following items refer to aspects of your Center Director's leadership. For each item, please indicate where your Director stands with regard to the behavior or characteristic described in the item.

52. Attends to political issues in the university

53. Attends to political issues in external organizations that are relevant to the Center's work

54. Understands the legal and regulatory landscape of the industries relevant to the Center's work

55. Operates within the budget

Fostering Creativity & Innovation

56. Willing to take risks with new ideas

57. Encourages "out-of-the-box" thinking—in self and others

Done

R&D Leadership Assessment - Windows Internet Explorer

http://iopsychology.chass.ncsu.edu

R&D Leadership Assessment

R&D Leadership Assessment

Instructions

The following items refer to aspects of your Center Director's leadership. For each item, please indicate where your Director stands with regard to the behavior or characteristic described in the item.

33. Personally writes proposals to obtain funding for the Center

34. Seeks funding from public sector sources

35. Seeks funding from private sector sources

Networking

36. Is well-networked in the industries relevant to the Center's work

37. Seeks opportunities to build new relationships with industry members.

38. Leverages professional relationships to benefit the Center's work


Done

R&D Leadership Assessment - Windows Internet Explorer

http://iopsychology.chass.ncsu.edu/craig/rdctr/360

R&D Leadership Assessment

R&D Leadership Assessment



Instructions

The following items refer to aspects of your Center Director's leadership. For each item, please indicate where your Director stands with regard to the behavior or characteristic described in the item.

49. Prepares an equipment budget for tools related to the Center's work	Too little of this							Perfect				Too much of this
5. Monitors new developments in technical areas related to the Center's work	<input type="radio"/> -3 Too little of this	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0 Perfect	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3 Too much of this					
6. Demonstrates personal knowledge of technical areas related to the Center's work	<input type="radio"/> -3 Too little of this	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0 Perfect	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3 Too much of this					

Ambition & Personal Productivity

7. Sets high goals—attempts to get a lot accomplished	<input type="radio"/> -3 Too little of this	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0 Perfect	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3 Too much of this					
8. Encourages others to get a lot accomplished	<input type="radio"/> -3 Too little of this	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0 Perfect	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3 Too much of this					

Done

Internet 100%

Leader Development

- Multisource performance assessment
 - Relevant perspectives in R&D
 - ✓ PIs
 - ✓ RAs
 - ✓ Funding agencies
 - ✓ Industry partners
 - ✓ External advisors
 - ✓ Co-directors
 - ✓ Admin staff
 - ✓ Self
- Feedback with guided interpretation and development planning
- Ongoing coaching over 3-6 months

Evaluation of Gamma, Beta, & Alpha Change

- 360° assessment re-administered
- Gamma change assessed via SMGCFA
- Beta change assessed via IRT
- Alpha change assessed in context of gamma and beta change, if occurred

Key Features & Contributions

- Tailored assessment of R&D-specific performance dimensions
- Beta and gamma change as both a measurement problem AND legitimate impact
- IRT-based analyses permit “corrections” for beta/gamma change allowing alpha change measurement
- Specific change type X dimension effects can be linked to traditional center-level outcomes—getting inside the Black Box
- Web-based director-initiated system permits frequent re-assessments to support continuous self-development

Support

This research has been supported by a grant from the National Science Foundation Science & Technology Center for Environmentally Responsible Solvents and Processes.

How to Get the Handout

- Request via e-mail from **bart_craig@ncsu.edu**
- Leave your contact info after the session