Effect Modifier Assessment Method of Evaluation

EVALUATING AN INSTITUTIONAL INTERVENTION ON FACULTY GENDER EQUITY IN STEM FIELDS

APPLICATION OF EFFECT MODIFIER ASSESSMENT (EMA)

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CHALLENGES OF EVALUATING PROGRAM IMPACT

EVALUATION DESIGNS HAVE TRADEOFFS

• Experimental design
  (gold standard = randomized control trial)
  • Often not feasible, esp. for institution-level change
• Non-experimental design
  • Does not isolate the effects of the program from other events (i.e., potential confounding)

* What else is going on in the program setting that could influence/modify the desired outcomes?

PROGRAM CONTEXT MATTERS

ORGANIZATIONS ARE COMPLEX AND DYNAMIC ENVIRONMENTS

• Leadership
• Policies
• Procedures
• Funding
• Technology
• Personnel

Changes or events unrelated to the program can influence
  ➢ Program implementation
  ➢ Program change mechanisms

PROGRAM CONTEXT MATTERS (2)

ROLE OF CONTEXTUAL FACTORS FOR EXPLAINING PROGRAM OUTCOMES

• Competing causes
  • Independently produce the outcomes
• Other influencing factors or “effect modifiers” might either
  • Amplify intended outcomes
  • Dampen intended outcomes

Effect Modifier Assessment (EMA) assesses these factors in the program environment.
Case Study: Application of the EMA Evaluation Method

- Large, public university in Massachusetts
- "Making Waves" (MW): Institutional intervention
  - Systemic approaches for gender equity in academic STEM careers - policies and practices
  - Foster a supportive institutional culture - bystander training to reduce microaggressions
- EMA Goal: Assess factors in the university environment that could explain MW-attributed outcomes.

The Effect Modifier Assessment (EMA) Method

Qualitatively assesses contextual factors relevant for program impacts

1. Preparation
2. Focus Group Data Collection
3. Data Analysis
4. Evaluation Interpretation

- What changes or events occurred?
- What effects did events have on outcomes?
- What else was happening during MW?
- How did those factors influence outcomes?

Classifying the Reported Events/Changes

Mechanisms of Influence on "Making Waves" Outcomes

- Events related to the intervention (e.g., Making Waves)
- Factors that may amplify or dampen program outcomes
- Events NOT related to MW that may explain the outcomes
- Events unrelated to MW outcomes (no known link)

EMA Scoring Sample – Changes/Events and Impacts

<table>
<thead>
<tr>
<th>Theme</th>
<th># Changes or Events</th>
<th>Effect Score (-3 to 3)</th>
<th>Classification of Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making WAVES program</td>
<td>9</td>
<td>+2</td>
<td>Primary Intervention</td>
</tr>
<tr>
<td>Microaggression training</td>
<td>9</td>
<td>+2</td>
<td>Primary Intervention</td>
</tr>
<tr>
<td>Increasing diversity hires (pos)</td>
<td>6</td>
<td>+2</td>
<td>Primary Intervention</td>
</tr>
<tr>
<td>Increasing diversity hires (neg)</td>
<td>3</td>
<td>-3</td>
<td>Primary Intervention</td>
</tr>
<tr>
<td>Hiring and promotion (pos)</td>
<td>10</td>
<td>+2</td>
<td>Competing Cause</td>
</tr>
<tr>
<td>Hiring and promotion (neg)</td>
<td>8</td>
<td>-2</td>
<td>Competing Cause</td>
</tr>
<tr>
<td>Change in chair/dean/provost</td>
<td>16</td>
<td>+1</td>
<td>Influencing Factor</td>
</tr>
<tr>
<td>Workload changes (neg)</td>
<td>9</td>
<td>-1</td>
<td>Influencing Factor</td>
</tr>
<tr>
<td>Facility renovations (pos)</td>
<td>9</td>
<td>+2</td>
<td>Unrelated</td>
</tr>
</tbody>
</table>

Adapted from: Lemire, Nielsen, & Dybdal. Evaluation (2012)
**VISUALIZING THE RESULTS**

<table>
<thead>
<tr>
<th>Strength of Influence</th>
<th>Primary explanation (i.e., MW)</th>
<th>Competing Causes</th>
<th>Influencing Factors</th>
<th>Unrelated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making WAVES program</td>
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<td></td>
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<td></td>
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<tr>
<td>Microaggression training</td>
<td></td>
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<tr>
<td>Increasing diversity hires: Pos.</td>
<td></td>
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<td></td>
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<tr>
<td>Increasing diversity hires: Neg.</td>
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<td></td>
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<tr>
<td>Hiring, promotion, termination: Pos.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hiring, promotion, termination: Neg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in chair/dean/provost: Pos.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in chair/dean/provost: Neg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload changes: Pos.</td>
<td></td>
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<tr>
<td>Workload changes: Neg.</td>
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<tr>
<td>Facility renovation, office relocation: Pos.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Facility renovation, office relocation: Neg.</td>
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</table>

**INTERPRETATION OF FINDINGS**

- Most events created by the MW program had positive effects for all STEM faculty (desired outcomes).
- Competing causes had mixed positive & negative impacts on the outcomes.
- Influencing & Unrelated factors had more negative than positive impacts.
- Conclusion: No evidence that positive outcomes should be attributed to factors other than the MW program.
- MW might have had more impact with different contextual factors.

**WAYS TO IMPLEMENT THE EMA METHOD**

- Assemble a team & do it yourself
  - Use EMA method article to prepare (Nobrega et al. 2023)
  - Use the Facilitator focus group script (Nobrega et al. 2021)
  - Assemble and train a research team

- Engage the UMass Lowell EMA evaluators
  - Coaching and guidance for your team
  - Conduct the EMA evaluation effort for your institution

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https://www.uml.edu/research/cph-new/
RESOURCES NEEDED FOR EMA DIY IMPLEMENTATION

• Expertise in focus group facilitation, including virtual focus group facilitation.
  – Co-facilitators plus an assistant is ideal
  – Practice before doing it “for real”

• Data analysis skills – textual thematic analysis, simple numeric computations
  – Qualitative analysis software helpful but not essential
  – MS Excel useful
  – Team of analysts to work together through all phases of coding and analysis

• Knowledge of the program setting and ongoing access to program provider team (consult for triangulation)

EMA REFERENCES


MAKING WAVES REFERENCES


• Bond, M. A., & Haynes-Baratz, M. C. (2022). Mobilizing bystanders to address microaggressions in the workplace: The case for a systems-change approach to Getting A (Collective) GRIP. *American Journal of Community Psychology*