

# Public Health Leadership Development: Factors Contributing to Growth

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**Objective:** This study compares pre- and posttest Leadership Practices Inventory (LPI-Self) scores for public health leaders who completed the Regional Institute for Health and Environmental Leadership (RIHEL) training program at least 2 years earlier; it seeks to identify factors contributing to changes in practices and overall leadership development for public health and environment leaders. **Participants/Setting:** Sixty-seven alumni who completed the yearlong RIHEL program between 1999 and 2002 participated through mailed surveys and phone interviews. **Main Outcome Measures:** The Leadership Practices Inventory, an alumni leadership development survey, and interviews provided evidence for positive change in leadership practices. **Results:** Alumni experienced significant increases in pre- to post-LPI scores, collaborative leadership practices, and communication skills consistent with those taught in the RIHEL program. Women presented higher Encourage the Heart scores than men. Years of public health service negatively correlated with Total Change scores of LPI. The RIHEL program as a training intervention was credited significantly with changes in leadership practices for alumni studied. Nine influencing factors were identified for leadership development and are embedded in a Leadership Development Influence Model. These include self-awareness, a leadership development framework, and skills important in multiple leadership situations. Confidence was both an encouraging factor and a resulting factor to the increased exemplary leadership practices. **Conclusion:** Leadership development in public health must include multiple factors to create consistent increases in exemplary leadership practices. While the study focused on the leadership development process itself, RIHEL training was reported as having a positive, significant impact overall in participant leadership development.

This study adds research data as a foundation for training content areas of focus. Studies to further test the Leadership Development Influence Model will allow public health training programs to pinpoint training where it can make a difference to improve leadership development in the public health sector.

**KEY WORDS:** leadership development, LPI, public health

The new millennium has presented us with consistent social, political, and economic dilemmas that challenge leadership capacities in many of our nation's systems. Public health leadership is no exception. When public health scholars Boedigheimer and Gebbie<sup>1</sup> posed the question, "Are public health administrators prepared for the challenges they face?" few knew to what degree these challenges would be amplified only a few months later. The tragedy of September 11, followed quickly by population-wide threats of bioterrorism, pandemic influenza viruses, endemic international conflicts, and widespread economic recessions, has created a sobering context in which this question has taken on new meaning throughout federal, state, and local public health agencies.<sup>2</sup> There is an increasing call for accountability and quality improvement through leadership development programs.<sup>3,4</sup>

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While experts responsible for the training of public health officials have responded to this mounting call for stronger leadership development and accountability,<sup>5-7</sup> few studies have been conducted to determine factors impacting public health leader's development. While important exit evaluations and retrospective analysis used for program assessment have been undertaken,<sup>8-10</sup> little research has examined the leadership development journey itself. There is a need for sound theory and insightful literature on whether leaders are developing and what accounts for that development, including the influence of specific training interventions.

The purpose of this study was to describe how effective leadership practices changed over time for public health and environment leaders and identify factors that might account for these changes. The study compared the before and after leadership practices of alumni more than 2 years after completing the 1-year Regional Institute for Health and Environmental Leadership (RIHEL) training program in the Rocky Mountains during 1999-2002. The RIHEL program works to "develop, connect and leverage leaders who work collaboratively in diverse sectors and communities to create and sustain health and well-being of people and the environment."<sup>11</sup> Forty-five fellows holding professional public health and environmental positions are chosen annually to participate in the institute's leadership development program focused on collaborative leadership skills required in today's public health environment. The RIHEL is an affiliate of the National Public Health Leadership Development Network. While this was not a study to assess the impact of RIHEL training specifically, it did provide information to RIHEL in a retrospective manner. The researcher was not an employee or teacher in the RIHEL program but has a specific interest in identifying groups of leaders to study their leadership process in hopes of developing a grounded theory of the leadership development process. The research questions posed in studying the RIHEL alumni were 3-fold: Q1: What leadership practices changed for these public health and environmental leaders? Q2: What factors account for any changes in practices and leadership development noted? Q3: To what extent did RIHEL contribute to the leader's development?

London<sup>12</sup> and others<sup>13,14</sup> who studied leadership development as a process identified multiple influences that need to be understood in the general development of leaders. Applied to the specific field in which the leader is working, the complexities of leadership development become uniquely situated. The objectives of this research were to explore these complex features to better understand leadership development, particularly in public health and environmental contexts.

## ● Methods

### Design format and procedures

This investigation used quantitative and qualitative approaches in a mixed-design methodology.<sup>15,16</sup> Since the Leadership Practices Inventory (LPI-Self) form had been administered and data retained by RIHEL prior to each participant entering their year of leadership training, a posttest comparison was administered to compare quantitative measures of change in the 5 practices identified by Kouzes and Posner<sup>17</sup> as necessary for exemplary leadership: Challenge the Process, Inspire a Shared Vision, Enable Others to Act, Model the Way, and Encourage the Heart. Further quantitative data and evaluative ratings of influences upon leadership practices were collected through an alumni leadership development survey.

The second phase involved a qualitative grounded theory analysis of open-ended survey and interview data. The survey focused on factors contributing to the participants' leadership development, which produced descriptive information of the participants and helped formulate the interview schedule. The survey also provided comparison data for emerging factors contributing to changes in LPI measures. Follow-up interviews were conducted to reach adequacy and saturation<sup>18</sup> of the qualitative survey data. Interview questions focused on features participants identified as most contributing to their leadership development. This mixed method allowed for diverse data collection and analysis to generate conceptual categories and properties to theorize about leadership development of public health and environment leaders. Triangulation was provided by the varied methods of data collection, and peer and expert examiners reviewed and confirmed code development for verisimilitude.

### Sampling plan

Purposive sampling is a common feature of naturalistic inquiry.<sup>19</sup> It increases the chances that multiple realities as well as the uniqueness of particular practices are captured in the study. To study leadership development in public health and environment leaders, the purposive sample of RIHEL alumni was chosen. There were approximately 125 graduates of the year-long program from 1999 to 2002, who took the same LPI-Self instrument, providing the largest comparative group to study with consistent pre- and posttest analyses. Alumni had been out of the program for at least 2 years and worked in multiple health and environmental contexts, varying in levels of leadership capacity in epidemiology and research, state and county health offices, environmental law, and medical practice offices.

Conceptually, they are similar as RIHEL alumni and public health care professionals, but substantively they are dissimilar in work contexts, responsibilities, age, and other demographic variables. This meets the requirements of Glaser,<sup>20</sup> who suggests that dissimilar substantive groups must be sampled for formal theory generation. Sixty-seven alumni (54%) responded positively to participate, returning all consent forms, surveys, and instruments as designed. This response rate compares similarly with that secured by Umble et al,<sup>10</sup> who had a 49% response rate in their evaluation study of the National Public Health Institute. Twenty randomly selected interviews were conducted among the 67 participants with the goal of confirming and deepening the information garnered through the open-ended survey questions. This study was approved by the institutional review board of the author's institution. Anonymity and confidentiality were assured by assigning ID numbers, and all names were purged from the data once the interviews were completed.

## Measures

To determine whether leadership practices changed over time, participants were asked to complete 2 instruments: the LPI-Self instrument and the RIHEL Alumni Leadership Survey. The LPI-Self form has been used with thousands of leadership training programs worldwide and consists of 30 behaviorally based statements measuring 5 leadership practices constructed from 10 behaviors Posner and Kouzes<sup>21</sup> discovered in their research. Earliest tests for internal reliabilities of the tool ranged from 0.69 to 0.85. Later test and retest reliability yielded averages of 0.93.<sup>22</sup> A sample question of the survey that measures Challenging the Process is, "I look for ways that others can try out new ideas and methods." While observed behavior can be more potent in evaluating such behavior, LPI-Self evaluation tests for bias in social desirability were not statistically significant. Since participants had already taken the pre-RIHEL LPI-Self training, only a posttest was administered, scored, and compared with pre-RIHEL LPI assessments to determine changes.

The Alumni Leadership Survey provided descriptive data such as age, ethnicity, degrees of study, and years in public health service. Six Likert-type questions focused on participants' perception of factors influencing their leadership development, including their 1-year RIHEL training. A sample question asked: "To what extent did your experience in RIHEL training positively influence your current ability to effectively lead by inspiring a shared vision? Comments/Explanations." This allowed participants to evaluate the personal relevancy of factors such as RIHEL training.<sup>23</sup> Follow-up interviews provided a tri-

angulation of data sources to confirm and illumine the possible leadership practice changes.

## Data analysis

In the first phase of this mixed-design methodology, changes in the 5 leadership practices<sup>10</sup> were examined through paired *t* tests and inferential quantitative data analysis. Correlations were explored in various demographic categories to determine any relationships. During the second phase, qualitative analysis using grounded theory methodology was applied to data collected from the surveys and interviews. A triangulation of these sources of data helped to formulate a theory about factors influencing leadership development among sampled leaders. This 2-step approach fits the developmental or 2-phase qualities noted by Creswell<sup>15</sup> and Greene et al<sup>16</sup> in discussing mixed methodologies.

To validate content validity, the survey and interview questions at face value must appear to be ascertaining the characteristics or attributes that contribute to a person's leadership development. Three professional leadership trainers reviewed the questions for this content validity. Internal validation of the categories or codes as accurate descriptors of the leaders' reports on their leadership development was addressed by triangulation of the data sources and a peer examiner. Artifact contents of all 3 data sources (LPI-Self, survey, and interviews) were cross-checked with each other. HyperResearch2.6 was used to organize, compare and contrast, and display the evolving data in a consistent, reliable manner. The triangulation of information from surveys, interviews, and the LPI instrument provided a richer opportunity for internal validity than one source alone.<sup>15</sup>

## ● Results

### Participant demographic information

The 67 alumni participating in this study were distributed with an average of 14 respondents from each of the 4 years analyzed. The mean age of the participants was 46, and nearly 75% had more than a baccalaureate degree. The mean years of public health work experience was 17, and their job experiences varied throughout the fields of public health and environment. Sixty percent of the participants were women, and the majority were white. More than 75% were in management positions.

### Leadership practice change outcomes

#### Quantitative measures

The LPI instrument measures the 5 practices of exemplary leadership through Likert-type ratings of 30

leadership statements. The higher the score, the stronger that practice is visible. Results from quantitative analysis reveal positive change, with significance in all 5 practices of leadership as measured in pre- to post-RIHEL LPI scores (Table 1). This suggests greater use of all 5 practices measured since completion of the RIHEL program, demonstrating significant improvement over time.

In addition to recording individual pre- and post-RIHEL LPI scores on each practice, a Total Change score was computed by adding an individual's 5 LPI pre- to post-practice change scores together. Overall 80% (N = 54) of the participants had at least 1 or more practices increase by the mean change score. Sixty-two percent of the participants (N = 44) saw at least 2 LPI practices increase by the mean, and nearly half (N = 31) demonstrated at least 3 practices changing. Since the RIHEL program encouraged participants to focus on improving 1 or 2 of the practices, this change is consistent with the institute's training goals. In addition, there was a strong correlation between the participants' self-report of the extent to which they viewed the RIHEL program as having influenced increased use of each practice and their change score.

### Qualitative measures

The surveys and interviews used open-ended questions about changes in participants' leadership and confirmed increased LPI practices through examples. Each of the participants identified a time since completion of the RIHEL program where they were aware of practicing leadership differently. Constant comparison analysis suggested 4 emerging themes of change in leadership behaviors: (1) participants reported specific utilization of the 5 exemplary practices of the LPI as well as collaborative processes taught during RIHEL training; (2) participants reported more self-awareness and reflection in their approach to leading; (3) participants described themselves as more conscious and intentional about the practices they utilized and why;

(4) participants reported more confidence in leadership, noting RIHEL training as having encouraged skill development. Further descriptions and examples are given here for each of these 4 themes.

### Increased collaborative and LPI-based practices

When participants reported a time they realized they were practicing leadership differently, they gave examples consistent with the language and core practices of the LPI. Illustrative comments included "I am learning to confront difficult situations more creatively, challenging the process" and "I think it is the whole inspiring piece. Getting people to have some ownership in what they do, to make it their own vision, their own activities. That is new for me."

### Increased reflective behaviors

Numerous participants reported increased listening and perspective taking abilities. Some noted: "I listen more. I use to talk and tell; now I listen to hear." This more open perspective enabled them to hear other points of view, increase overall understanding, and in many cases "stay at the table" through contentious times. This, in turn, allowed them to develop plans that include multiple viewpoints and stronger commitments to common goals required for successful collaborations.<sup>24</sup>

### Increased intentional behaviors

Participants reported more intentional behaviors that kept them growing. In an effort to solicit many stakeholders in collaborations, they reported intentionally seeking them out. They reported focusing their workplace behaviors to strengthen weaker practices. Participants sought feedback, were more committed to long-term relationships in the face of differences, and reported intentionally creating positive work climates themselves. They recalled intentionally thinking in collaborative ways.

### Increased confidence

Participants reported an increased sense of self and a belief that they could improve and overcome obstacles that in the past discouraged them. This increase also showed up in the key factors attributable for leadership development, which will be considered later. They sought new opportunities, believing in themselves in ways they had not before. They noticed they were able to self-correct when needed, based on awareness and analysis of situations they normally had not understood. They felt empowered to act and take initiative to challenge the process, or establish a new program that tied into their passions.

**TABLE 1 • Paired *t* tests for Pre-RIHEL and Post-RIHEL LPI Scores**

| LPI Practice            | Mean    |          | <i>t</i> | <i>df</i> | <i>P</i> |
|-------------------------|---------|----------|----------|-----------|----------|
|                         | Pre-LPI | Post-LPI |          |           |          |
| Challenge the Process   | 43.40   | 47.76    | 5.526    | 66        | .000     |
| Inspire a Shared Vision | 39.91   | 46.16    | 6.158    | 66        | .001     |
| Enable Others to Act    | 47.85   | 51.76    | 5.451    | 66        | .000     |
| Model the Way           | 45.49   | 49.89    | 5.169    | 66        | .010     |
| Encourage the Heart     | 41.37   | 47.34    | 6.001    | 66        | .000     |

Abbreviations: LPI, Leadership Practices Inventory; RIHEL, Regional Institute for Health and Environmental Leadership.

The qualitative responses confirm the quantitative data that RIHEL alumni increased in a number of practices related to both the LPI and effective collaborative leadership processes. Participants reported a change in their view of the leadership situation, their understanding of what to do, and practices that were more appropriate. Largely expressed in language reflecting the 5 practices of the LPI and collaborative behaviors, leaders were more reflective, intentional, and confident in their leadership approaches. Use of the practices seemed to develop confidence, and confidence, in turn, encouraged the use of the practices.

### **Factors influencing leadership practice changes: Noninfluencing factors**

Factors that might encourage changes in leadership practices were explored through the use of analyses of variance, Pearson  $\chi^2$  tests, and post hoc tests. Age, years in current job, years in public health, degrees earned, ethnicity, job titles, job categories, and agencies appeared to have no relationship with participants LPI final scores or Total Change scores.

### **Factors influencing changes**

**Quantitative influences**—There were 3 quantitative measures that did relate to LPI scores. The first is gender. Independent-sample *t* tests and analyses of variance were used to measure relationships between gender and Total Change scores, and gender and the 5 post-LPI scores. Women scored higher final post-LPI on Encourage the Heart than men (female:  $M = 49.34$ ; male:  $M = 44.19$ ;  $F = 7.057$ ,  $df = 66$ ,  $P = .01$ ).

Second, years in public health negatively correlated with Total Change scores and 2 of the 5 specific practice change scores. A nonpartial Pearson product-moment analysis detected a negative correlation ( $r = -0.268$ ;  $P = .028$ ) for years in public health. Although age and years in public health correlated, as one would expect, further analysis disclosed that Total Change in LPI scores negatively correlated with years of public health service ( $r = -0.320$ ;  $P = .009$ ). No other correlations, for example, between age and Total Change scores, were significant. It appears that the level of the final LPI score was not limited in any way by the number of years; instead, it was the amount of LPI score change experienced that seems to vary with years in public health service.

Third, Pearson correlations were used to compare the participants' answers to 5 questions regarding their perceived influence of RIHEL training on each of the practices and LPI change scores. There was a significant correlation with post-LPI scores and the extent to which participants reported RIHEL training positively influencing the use of the practice (Table 2). The higher the post-LPI score was, the more likely the participant

**TABLE 2 • Correlation of Perceived Influence of RIHEL Training on LPI Practice Changes**

| LPI Practice Perceived as Influenced by RIHEL Training | Correlation | <i>P</i> |
|--|-------------|----------|
| Challenge the Process                                  | 0.240       | .05      |
| Inspire a Shared Vision                                | 0.317       | .009     |
| Enable Others to Act                                   | 0.459       | .000     |
| Model the Way  | 0.339       | .005     |
| Encourage the Heart                                    | 0.399       | .001     |

Abbreviations: LPI, Leadership Practices Inventory; RIHEL, Regional Institute for Health and Environmental Leadership.

credited RIHEL training for increased effectiveness in that practice.

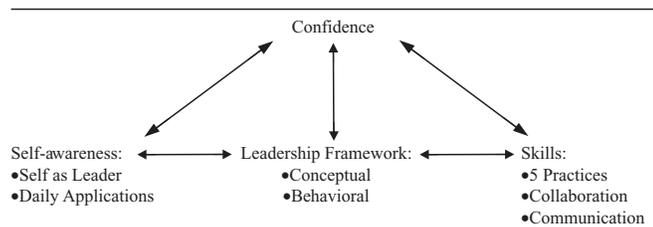
### **Qualitative influences**

There were 9 common factors that appeared to influence their increases in leadership practices and leadership development. The RIHEL training program was one of those. The other 8 factors noted were related to this training experience and included: A Leadership Framework, Self-awareness, Opportunities, Experience and Practice, Passion and Commitment, Supportive Relationships, Positive Climate, and Confidence. Obstacles to leadership development were also discovered and confirmed some of the 9 influencing factors just mentioned. They included Politics (organizational and interpersonal), Heavy Workloads, Lack of Self-reflection Time (including keeping the big picture in mind), and Negative Climates or Relationships.

### **RIHEL influence**

Finally, the RIHEL program was seen as strongly encouraging alumni leadership development. When participants identified an important leadership opportunity they had since completing the RIHEL program, almost all (95%) credited the training for the way they led. The opportunities spanned numerous contexts for leadership including boards, collaborations, and pilot projects. Their behaviors cited in these opportunities confirmed increased use of LPI practices, collaborative behaviors, and communication skills. When participants described the influence of RIHEL training, confidence was at the center. Confidence increased during RIHEL training and as a result of practicing what they learned since completion of the RIHEL program. Confidence seemed to be built on 3 factors: (1) Self-awareness; (2) A Clearer Leadership Framework; and (3) Specific Skill Development. The Leadership Development Influence Model depicts these interacting factors (Figure).

Self-awareness shaped a new view of themselves as leaders with awareness for daily application. This

**FIGURE ● Leadership Development Influence Model<sup>a</sup>**

Abbreviation: RIHEL, Regional Institute for Health and Environmental Leadership.  
<sup>a</sup>Model explaining key factors influencing the leadership development of RIHEL alumni.

view was supported by a personal framework or definition of leadership that included conceptual and behavioral features. Skills included the ongoing use of the 5 LPI practices, collaboration principles, and communication.

## ● Discussion

The findings of this research project suggest factors to consider in developing public health and environment leaders. Leadership behaviors increased across all 5 LPI scores for alumni since completing the RIHEL program, confirming leadership development over time. Women scored higher than men on post-LPI scores for Encourage the Heart. This is consistent with the research of Posner and Kouzes.<sup>21</sup> There may be social expectations that fall along gender lines that encourage women and discourage men from practicing this behavior. These data do not provide a conclusive explanation or causation and are worth further study.

Second, a negative relationship between years in public health service and the Total Change scores was discovered. It could be that the expectancy of less experienced leaders is high, since they are at the beginning of their career and may have a stronger desire for behavioral change contributing to success as Kirkpatrick<sup>25</sup> notes. Confidence in one's ability to perform or achieve is at the center of self-efficacy,<sup>26,27</sup> motivating the less experienced participants to seek growth to become more accomplished in their careers. More experienced leaders may be less inclined to expect further growth. Further research is necessary to determine factors contributing to differences, especially as funding is applied to all levels of leadership development.

The third and strongest correlation of the quantitative data showed that when participants scored a higher use of a practice, they reported the RIHEL program as strongly influencing that growth. Again, there may be a factor of self-efficacy operating here, but a well-developed training program can be influential in the growth process.

Nine factors were identified as influencing these changes and contributing to participants' development, including the RIHEL program. Having a leadership or definition to understand leadership conceptually and practically was found important. It had a grounding effect that built confidence and articulation. An understanding of self as leader, including one's strengths and weaknesses and an understanding of daily leadership applications, was important. Opportunities, experience, and practice formed the fourth and fifth factors. RIHEL leaders learned and developed as they sought opportunities and gained experience in the practices. Passion and commitment kept leaders focused, allowing them to lead in difficult times, develop new approaches to old problems, or create positive work environments. Supportive relationships were pervasive throughout the participants' experience. A positive climate spurred them on to further growth in their work setting. Finally, confidence was reported as central in their development.

The RIHEL program as a training intervention can be credited significantly with the changes in leadership practices of alumni studied. It gave them a leadership framework, self-awareness, and skills to improve in multiple leadership opportunities. Increased confidence was dominant in their development. Confidence was both an encouraging factor and a resulting factor to the increased exemplary practices. Leadership training using the RIHEL program had a positive impact overall in participants' development.

## Limitations

There are several potential limitations of the study. Because this study used a purposive sampling procedure, care must be taken in generalizing results. Although 67 participants was an adequate sample for quantitative tests to be effective, it is limited to a self-selected group representing a common experience within a specific range of years 1999-2002. Expanding the theoretical sampling pool and adding observed behavior or reports from coworkers would confirm changes in practices and influences proposed in the Leadership Development Influence Model. Self-reporting measures abound in leadership development research<sup>8,28</sup> because of complexity of researching observed behavioral changes over time. Further research including 360-degree feedback and observations should be undertaken to validate the self-reporting and anecdotal observations of training programs.

## ● Conclusion

This study provides insight for those integrally involved with public health leadership development.

Exemplary leadership practices can be increased over time with intentionality. Training programs and curriculum should consider including a clear leadership framework, self-awareness building experiences, and skills that apply to multiple leadership opportunities. The use of supportive relationships and real-time leadership learning opportunities give valuable experience to practice skills that build confidence. Promoting skills that build positive work climates will foster collaboration and transformative leadership opportunities.

Further exploration of these themes across the broader field of public health and other sectors will increase our knowledge base to build successful leadership training programs. In an age when competent leadership pools are shrinking and the context for leadership is in constant flux, a clearer idea of how leaders develop is needed. This study provides perspective on that development process.

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