Leadership in local government computer service organizations within the state of California

Robert Benjamin Beavan

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LEADERSHIP IN
LOCAL GOVERNMENT COMPUTER SERVICE ORGANIZATIONS
WITHIN THE STATE OF CALIFORNIA

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Public Administration

by
Robert Benjamin Beavan
June 1993
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Approved by:
Brian Watts, Ph.D., Chair, Public Administration
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ABSTRACT

The specific issue of this project is the role of leadership in local government computer service organizations within the state of California, and the strength of the statistical relationship between various principles of leadership and effectiveness of such organizations. In addition, this project considers the relationship between leadership and customer service. To accomplish the goals of this project, 136 top managers of those computer service organizations were surveyed. Based on that survey, a general conclusion is reached that certain facets of leadership, such as trust by followers, appear to be statistically related with organizational effectiveness as perceived by the top managers. By contrast, this research does not substantiate such a statistical relationship between either situational leadership or coaching, and organizational effectiveness.
ACKNOWLEDGEMENTS

I want to thank the members of my project committee who gave their time and expertise to help me do this research. Dr. Watts, my committee chair, inspired me to do this project while I was taking his seminar on leadership in the public sector during the summer of 1992. I very much appreciate his insightful comments and support while doing this project. In addition, Dr. Young's class on research methods has served me well while doing this research. Above all, Dr. Young's teachings were very important for me to complete a methodologically sound project.
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CHAPTER 1
INTRODUCTION

These are very difficult and stressful times for anyone working in government. Budget cutbacks, organizational downsizing, and organizational extinction are very real threats. In the midst of this difficulty, Osborne and Gaebler (1992, p. 166-194) suggest that there is a crisis of leadership in government. Nevertheless, leadership involves influencing the people who are key to coping with these difficult times in government at both the national and the local level.

These difficult times are also affecting computer service organizations in local government within California. Against this background, some evidence suggests that the employees in computer service organizations tend to have a strong need for personal technical accomplishment and a very low need for social interaction (Couger & Zawacki, 1980, p. 28). Another characteristic of computer professionals is a tendency to identify more with their profession than with their work organization (Couger & Zawacki, 1980, p. 5). As a result of such identification by employees to outside the work place, top managers face the very difficult challenge of motivating employees to be concerned about their customers' business needs. Furthermore, employee identification to outside the work place can serve as a neutralizer to leadership. As a result, leadership may only be weakly related to motivating
employees to better serve the needs of their organization and their customers.

In addition, technological changes are having a dramatic effect on computer service organizations. For example, recent technological advances are offering very real alternatives to traditional centralized computing services. As a consequence, computer service organizations must become more responsive to the business versus technical needs of their customers. Moreover, the customers of such organizations are becoming increasingly computer literate. These changes in the external environment are exerting pressures for transforming the computer support organization into becoming more responsive to customers. Against this background, the survival of a computer service organization depends on providing customer services of superior quality and responsiveness.

If effective, leadership can help a computer service organization transform to meet these pressures from the external environment; however, the identification of employees to their profession and technology may make such leadership ineffective. Thus, a computer service organization in local government within California will face a great challenge in trying to remain viable.

The literature suggests that leadership by top managers may be important for computer service organizations to be viable. Thus, this project starts out with an overview of
the literature that is related to leadership and computer service organizations. Following this theory overview, 32 hypotheses are given that are tested using the results of a survey of 136 top managers. (Special instruments were used for the survey, and this project addresses issues of validity and reliability for those instruments by using generally accepted research methodology.)

In addition, this project makes use of an open ended survey question, which addresses important qualities of an effective top computer manager. This project also uses standard statistical methods to test the hypotheses and the strength of statistical relationships between dependent and independent variables. Finally, findings and recommendations are presented that are based on the data analyses and tests of hypotheses.
CHAPTER 2
THEORY OVERVIEW

According to The Random House College Dictionary (1980, p. 421), "effective" means "adequate to accomplish a purpose; producing the intended or expected result." However, this dictionary definition does not adequately capture the essence of effectiveness for a public manager. One of the classic quotes on effectiveness is by Drucker (1985, p. 45), and reads as follows: "Effectiveness is the foundation of success - efficiency is a minimum condition for survival after success has been achieved. Efficiency is concerned with doing things right. Effectiveness is doing the right things." Drucker (1985, p. 161) also discusses effectiveness for public organizations, and states that "... they need effectiveness, that is emphasis on the right results." Another researcher supports this view, claiming that "As a manager, your mission must be first and foremost, to make government work" (Chase & Reveal, 1983, p. 177).

A number of management and leadership strategies have been developed for attempting to achieve efficiency and effectiveness in the public sector. With all of these strategies, a problem for a public manager is how to measure effectiveness. To help answer this problem, Wagenheim and Reurink (1991) propose using customer service as a management strategy for public managers (p. 263). In fact, Wagenheim and Reurink (1991)
assert that "Customer service, as an evaluative tool, can help public organizations look at their operations and measure efficiency and effectiveness without the benefit of a profit margin" (p. 266).

The literature suggests that leadership may play a role in making public organizations more effective. According to Johns (1983), "leadership occurs when particular individuals exert influence upon others" (p. 304). This suggests that a manager in the public sector needs to be a leader in order to be effective. In fact, a number of researchers have noted the importance of leadership for managers in both the public and the private sector (Bennis & Nanus, 1985; Hersey & Blanchard, 1988; Osborne & Gaebler, 1992; Peters & Austin, 1986). For example, Osborne and Gaebler (1992) suggest that customer orientation is critical for leadership in government (p. 166-194).

A dilemma with leadership is that it is not easily understood (Biggert & Hamilton, 1987, p. 429). As noted by Johns (1983), "the study of leadership, despite its great volume, has not produced perfect agreement about what constitutes effective leadership" (p. 325). Furthermore, no one leadership style is effective for all situations. For example, Nakamura and Smallwood (1980) observe that there is a need to be flexible and imaginative in adjusting preferred leadership styles to meet political challenges and to implement policy effectively (p. 167). In addition, Hersey and Blanchard
(1988) recommend that leaders adapt their leadership styles according to their followers' readiness levels (p. 177-179); in other words, leadership is situational.

In general, the literature suggests many dimensions of leadership (Bennis & Nanus, 1985; Chamers, 1984; Hersey & Blanchard, 1988; Olshfski, 1989; Osborne & Gaebler, 1992; Peters & Austin, 1986; Tetrick, 1989). These include situational leadership, paying attention, management by walking around, coaching, trust, learning in an organizational context, conflict management, organizational positioning, vision, communications, and customer orientation.

A model proposed by Bolman and Deal (1991) provides an organized way in which to view these various principles via the following frames: structural, human resource, political, and symbolic (p. 403-421). Another framework for viewing leadership principles is provided by table 1, below.
Table 1
Categorization of Leadership Principles

<table>
<thead>
<tr>
<th>Internal focus</th>
<th>External focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>Self/others</td>
</tr>
<tr>
<td>Situational leadership</td>
<td>Learning in an organizational context</td>
</tr>
<tr>
<td>Paying attention</td>
<td>Conflict management</td>
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<tr>
<td>Management by walking around</td>
<td>Communications</td>
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<tr>
<td>Coaching</td>
<td></td>
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<tr>
<td>Trust</td>
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</table>

The literature also suggests that leadership may not be important for an organization devoted to the technical support of others, such as for a computer service organization. According to Johns (1983, p. 329), "leadership is most important when few neutralizers or substitutes for leadership exist." One of those neutralizers is a strong identification by workers to their profession. My own experience as a
manager of a central computing facility suggests that computer professionals tend to have a greater identification to their profession than to their employing organization. Thus, leadership by a manager of a computer support organization may be weakly related to the organization's effectiveness.

Furthermore, a local government's computer service organization poses an especially challenging environment for its top manager. For example, the introduction of microcomputers is having a profound effect on users' computer literacy and demands (Ahituv & Neumann, 1986, p. 493; Gauch, 1992, p. 311; Lucas, 1986, p. 507; Tom, 1987, p. 228). Thus, the computer service organization needs to engender a strong user orientation (Danziger, Kraemer, Dunkle, & King, 1993, p. 165). This increase in user computing capability is also increasing pressure for decentralization of the computing function (Danziger et al., 1993, p. 164; Gauch, 1992, p. 372; Tom, 1987, p. 227). Along with increasing user demands, the top manager faces regulatory and technological pressures for change (QED Information Services, 1989, p. 207). Indeed, the need for change can be triggered by such external environmental pressures (Tichy & Devanna, 1986, p. 28).

Nevertheless, these pressures for change are often opposed by a general resistance to technological change (Ahituv & Neumann, 1986, p. 28; QED Information Services, 1989, p. 207). In addition, red tape is a factor that inhibits change for a computer service organization (Bretsneider, 1990, p. 541).
The computer service organization's internal environment is also challenging. Research suggests that computing technology is a factor in determining the types of individuals who are attracted to work in a computer service organization (Hammer & Turk, 1987, p. 681; Interrieden, 1987, p. 844). Moreover, such individuals tend to have difficulty communicating with users in business terms (Thierauf, 1983, p. 201; Tom, 1987, p. 230; Wysocki & Young, 1990, p. 106). In addition, computer service organizations can be expected to have a relatively high turnover of personnel (Thierauf, 1983, p. 198).

Thus, people problems are more important than technical problems for the top manager of a computer service organization (Holmes, 1973, p. 447). Indeed, Wysocki and Young (1990, p. 9) indicate that such a top manager's "historical dedication to technology will no longer be appropriate." To be successful in this challenging environment, the top manager needs to: have knowledge of the total organization's business activities, be sensitive to the needs of his or her subordinates, and be patient while communicating in business terms with users (Wysocki & Young, 1990, p. 37).
CHAPTER 3
HYPOTHESES

For feasibility and to ensure a reasonable sample size, this study focused on computer service organizations in local government within the state of California. The hypotheses for those organizations involve perceptions of respondents for each question on the survey instrument. Specifically, the following 32 operational hypotheses developed according to the criteria in Young (1991, p. 8) are tested as part of this project:

1. Differences in user service orientation (as measured by degree of agreement to the statement "Service to users is important to my organization.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

2. Differences in employee identifications with their profession (as measured by degree of agreement to the statement "My employees identify closely with their profession.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

3. Differences in employee identification with their organization (as measured by degree of agreement to the statement "My employees identify closely with their organ-
ization."") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

4. Differences in the top manager's perception of the importance of leadership (as measured by degree of agreement to the statement "Leadership is important for me to be an effective head of my organization.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

5. Differences in situational leadership (as measured by degree of agreement to the statement "I use a variety of leadership styles.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

6. Differences in the use of management by walking around (as measured by degree of agreement to the statement "I frequently meet in my employees' workspaces.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

7. Differences in coaching (as measured by degree of agreement to the statement "My employees view me as a coach.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").
8. Differences in trust (as measured by degree of agreement to the statement "My employees trust me.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

9. Differences in learning in an organizational context (as measured by degree of agreement to the statement "Learning is encouraged in my organization.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

10. Differences in conflict management effectiveness by top management (as measured by degree of agreement to the statement "I need to be effective in managing conflicts.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

11. Differences in the positioning of the organization in response to external technological changes (as measured by degree of agreement to the statement "I am positioning my organization to respond to external technological changes.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

12. Differences in the positioning of the organization in response to external political changes (as measured by degree
of agreement to the statement "I am positioning my organization to respond to external political changes.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

13. Differences in vision (as measured by degree of agreement to the statement "I have clearly communicated a vision for the future of my organization, to my employees.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

14. Differences in top manager interpersonal communications (as measured by degree of agreement to the statement "Interpersonal communications is important for me to be an effective head of my organization.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

15. Differences in the top manager's user orientation (as measured by degree of agreement to the statement "I have a strong orientation to my users.") will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

16. Differences in the employees' user orientation (as measured by degree of agreement to the statement "My organi-
zation's employees have a strong orientation to users of our computer services." will be associated with differences in organizational effectiveness (as measured by degree of agreement to the statement "My organization is effective.").

17. Differences in user service orientation (as measured by degree of agreement to the statement "Service to users is important to my organization.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

18. Differences in employee identifications with their profession (as measured by degree of agreement to the statement "My employees identify closely with their profession.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

19. Differences in employee identification with their organization (as measured by degree of agreement to the statement "My employees identify closely with their organization.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

20. Differences in the top manager's perception of the importance of leadership (as measured by degree of agreement
to the statement "Leadership is important for me to be an effective head of my organization." will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

21. Differences in situational leadership (as measured by degree of agreement to the statement "I use a variety of leadership styles.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

22. Differences in the use of management by walking around (as measured by degree of agreement to the statement "I frequently meet in my employees' workspaces.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

23. Differences in coaching (as measured by degree of agreement to the statement "My employees view me as a coach.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

24. Differences in trust (as measured by degree of agreement to the statement "My employees trust me.") will be associated with differences in user satisfaction (as measured by
degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

25. Differences in learning in an organizational context (as measured by degree of agreement to the statement "Learning is encouraged in my organization.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

26. Differences in conflict management effectiveness by top management (as measured by degree of agreement to the statement "I need to be effective in managing conflicts.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

27. Differences in the positioning of the organization in response to external technological changes (as measured by degree of agreement to the statement "I am positioning my organization to respond to external technological changes.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

28. Differences in the positioning of the organization in response to external political changes (as measured by degree of agreement to the statement "I am positioning my organiza-
tion to respond to external political changes.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

29. Differences in vision (as measured by degree of agreement to the statement "I have clearly communicated a vision for the future of my organization, to my employees.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

30. Differences in top manager interpersonal communications (as measured by degree of agreement to the statement "Interpersonal communications is important for me to be an effective head of my organization.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

31. Differences in the top manager's user orientation (as measured by degree of agreement to the statement "I have a strong orientation to my users.") will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").

32. Differences in the employees' user orientation (as measured by degree of agreement to the statement "My organization's employees have a strong orientation to users of our
computer services." will be associated with differences in user satisfaction (as measured by degree of agreement to the statement "Users are satisfied with computer services being provided by my organization.").
CHAPTER 4
OPERATIONAL DEFINITIONS

To provide an understanding of terminology used in this paper, the following key terms are defined:

**Category-rank Linear Relationship:** For this project's contingency or cross-tabulation tables, a category-rank linear relationship is the degree to which "as X increases, Y also increases, and conversely as Y increases, X also increases," as measured by the Tau-b statistical index (Kahout, 1974, p. 230).

**Coaching:** Coaching is caring for and then nurturing people in the organization (Peters & Austin, 1986, p. 382-446).

**Communications:** Communications as a leadership principle is the use of social architecture by a leader to create the understanding, participation, and ownership of the organization's vision (Bennis & Nanus, 1985, p. 111).

**Conflict Management:** Conflict management is recognizing internal organizational conflict and taking action so that the conflict leads to constructive behavior (Callahan & Fleenor, 1988, p. 218).

**Customer Orientation:** Customer orientation is a focus by the leader and followers on the needs, both current and future, of customers for an organization's products and services. A corollary of this focus is concentration on the market for those products and services.
Leadership: Leadership is "the influential increment over and above mechanical compliance with the routine directives of the organization" (Katz & Kahn, 1978, p. 528). Thus, this definition makes a distinction between leadership and authority.

Learning in an Organizational Context: Learning in an organizational context is the leader using his or her organization's internal environment to facilitate learning by the leader, his/her followers, and others in the organization (Bennis & Nanus, 1985, p. 189).

Management By Walking Around: This principle is drawn from Peters and Austin (1986, p. 447), and is frequent informal walking around and meeting with employees in their work spaces.

Organizational Positioning: Organizational positioning is aligning the internal organization to sustain a viable niche in its external environment (Bennis & Nanus, 1985, p. 162-166).

Paying Attention: This principle is spending time on what is important (Peters & Austin, 1986, p. 312).

Situational Leadership: Situational leadership is the leader behaving in a flexible manner, diagnosing the leadership style appropriate to the situation, and applying the appropriate style (Hersey & Blanchard, 1988, p. 106).

Strictly Monotone Asymmetric Relationship: For this project's contingency or cross-tabulation tables, a strictly mono-
tomic asymmetric relationship is the degree to which "as X increases, Y also increases, but not visa versa," as measured by the Somers' d statistical index (Kahout, 1974, p. 230).

Trust: Trust is "the emotional glue that binds followers and leaders together" (Bennis & Nanus, 1985, p. 152).

Vision: Vision is an agenda or intention for the future outcome of an organization, expressed in terms that "are compelling and pull people toward them" (Bennis & Nanus, 1985, p. 28).

Weak Monotone Relationship: For this project's contingency or cross-tabulation tables, a weak monotone relationship is the degree to which "as X increases, Y either increases or stays the same," as measured by the Gamma statistical index (Kahout, 1974, p. 230).
CHAPTER 5
RESEARCH DESIGN

Variables

This research project involves the following 16 independent variables: (1) importance of service to users; (2) employee identification with their profession; (3) employee identification with their organization; (4) importance of leadership to the top manager; (5) variety of leadership styles; (6) management by walking around; (7) coaching; (8) trust; (9) learning in an organizational context; (10) conflict management; (11) organizational positioning in response to external technological change; (12) organizational positioning in response to external political change; (13) vision; (14) importance of inter-personal communications; (15) user orientation of top manager; and, (16) user orientation of employees. In this paper, the 16 independent variables are labelled IV1 through IV16, respectively.

The dependent variables are organizational effectiveness and user satisfaction with services being provided. In this paper, the two dependent variables are labelled DV1 and DV2, respectively.

Extraneous variables include but are not limited to the following: (1) type of local jurisdiction (city, county, local school district, county education office, or county
superintendent of schools); (2) size of the local jurisdiction; (3) number of employees in the computer service organization; and, (4) degree of autonomy of the computer service organization. In this paper, the four identified extraneous variables are labelled EV1 through EV4, respectively.

Using the categorization of variables from Baker (1988, p. 128-131), Blalock (1979, p. 15-19), Iversen (1979, p. 15-17), Pilcher (1990, p. 84-89), and Young (1991, p. 19-22), the independent and dependent variables are treated as ordinal variables. Of the extraneous variables, EV1 and EV4 are treated as nominal variables, while EV2 and EV3 are treated as ordinal variables.

For clarification, Table 2 below provides a summary of the variables that are evaluated as part of this project.
Table 2  
Categorization of Variables

<table>
<thead>
<tr>
<th>Var</th>
<th>Type</th>
<th>Category</th>
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<tbody>
<tr>
<td>DV1</td>
<td>Ordinal</td>
<td>Organizational effectiveness</td>
</tr>
<tr>
<td>DV2</td>
<td>Ordinal</td>
<td>User Satisfaction</td>
</tr>
<tr>
<td>EV1</td>
<td>Nominal</td>
<td>Jurisdiction (city, county, etc.)</td>
</tr>
<tr>
<td>EV2</td>
<td>Ordinal</td>
<td>Size of jurisdiction</td>
</tr>
<tr>
<td>EV3</td>
<td>Ordinal</td>
<td>Number of employees</td>
</tr>
<tr>
<td>EV4</td>
<td>Nominal</td>
<td>Autonomy of department</td>
</tr>
<tr>
<td>IV1</td>
<td>Ordinal</td>
<td>Importance of user service</td>
</tr>
<tr>
<td>IV2</td>
<td>Ordinal</td>
<td>Employee identification with profession</td>
</tr>
<tr>
<td>IV3</td>
<td>Ordinal</td>
<td>Employee identification with organization</td>
</tr>
<tr>
<td>IV4</td>
<td>Ordinal</td>
<td>Importance of leadership</td>
</tr>
<tr>
<td>IV5</td>
<td>Ordinal</td>
<td>Variety of leadership styles</td>
</tr>
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<td>IV6</td>
<td>Ordinal</td>
<td>Management by walking around</td>
</tr>
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<td>IV7</td>
<td>Ordinal</td>
<td>Coaching</td>
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<td>Trust</td>
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<tr>
<td>IV13</td>
<td>Ordinal</td>
<td>Vision</td>
</tr>
<tr>
<td>IV14</td>
<td>Ordinal</td>
<td>Interpersonal communications</td>
</tr>
<tr>
<td>IV15</td>
<td>Ordinal</td>
<td>User orientation by top manager</td>
</tr>
<tr>
<td>IV16</td>
<td>Ordinal</td>
<td>User orientation by employees</td>
</tr>
</tbody>
</table>
Unit of Analysis

For feasibility and to ensure an adequate sample size, the unit of analysis for this research project is the population of top managers for computer support organizations in local government within the state of California. The scope of local governments, or jurisdictions, for this research project is cities, counties, local school districts, county education offices, and county superintendents of schools.

An early, major impediment to this research project was that an extensive review of the professional and academic literature did not yield a directory for those top managers. As a result, information available in the public domain was used to generate the list of 136 top managers who were the subjects of this research project. (A listing of these managers is provided as appendix A.) The primary sources for appendix A were Ruane (1990) and California State Department of Education (1991). Additional sources for appendix A were the government sections of 1993 edition telephone directories for California cities with populations of over 100,000, based on the list of cities from Tryzynu (1990).
Methodology

This project involved the following two methods:

I. An analysis of the professional and academic literature germane to leadership and computer support organizations.

II. A survey of top managers for computer support organizations in local government within California.

The literature analysis established the current state of knowledge of the role and relative importance of leadership to computer support organizations in the public sector. In addition, the literature analysis was used to establish operational definitions of key terms. Part of the literature analysis involved a review of survey instruments that could be of use to this research project.

The survey involved mailing a questionnaire to each top manager to establish his or her perception of the role of leadership, and to develop data to test the strength of the statistical relationships between various leadership strategies and the variables of organizational effectiveness and user satisfaction. Please refer to appendix B for a copy of the questionnaire that was used for this research project.

To enhance survey response, the questionnaire was limited to one page. In addition, the top manager was requested to return the completed questionnaire anonymously, via a
stamped, self-addressed envelope. The cover letter (see appendix C for a copy) also appealed to the each top manager as a colleague.

Instruments

The research for this project revealed nineteen instruments, which have been used to investigate various aspects of leadership. (A listing of those instruments is provided as appendix D.) Unfortunately, the nineteen instruments are not applicable for addressing most of the items of interest to this project. Thus, the only practical approach is to develop a special survey instrument; however, as noted by Young (1991, p. 32-33) such a special questionnaire raises questions of validity and reliability.

For this project, the issue of validity was addressed through "face validity," or "content validity," as defined in Baker (1988, p. 119). In other words, each question in the survey instrument was carefully examined for its meaning and relationship to a given variable, and to ensure that it "really seems to be measuring the underlying concept" (Baker, 1988, p. 119). Furthermore, a Likert scale (Baker, 1988, p. 378) was used for most of the questions to set up ordinal categories for degrees of agreement.

In addition, the criterion of "test-retest reliability"
from Baker (1988, p. 124) and Young (1991, p. 32) was used to address the issue of reliability of the survey instrument. In other words, two groups of size 116 and 20 were randomly selected from the 136 managers. The second group of 20 had their survey questionnaires mailed out a week later than the first group of 116. For information, a total of 84 and 11 surveys, respectively, were received from the first and second group.

As a test, the answers by the first group were compared with those for the second group to establish a test-retest coefficient (Young, 1991, p. 32). Applying the formula from Bernstein (1966, p. 81) to the survey response data for questions 2a through 2r, the coefficient of test reliability, or test-retest coefficient, is 0.734. Since this test-retest coefficient is above 0.60, the questionnaire appears to be sufficient for differentiating between two groups with a relatively narrow range of difference between their means (Garrett & Woodworth, 1962, p. 351).

Further, Garrett and Woodworth (1962, p. 340) recommend the split-half method for assessing the reliability of "questionnaires and inventories dealing with personality variables, attitudes and interests." With the split-half method, alternate answers to the questionnaire are first divided into two equivalent halves and the Spearman Brown prophecy formula is used to estimate the reliability of the entire questionnaire (Garrett & Woodworth, 1962, p. 339). Using the formula for
the split-half method given by Bernstein (1966, p. 83), the Spearman Brown prophecy formula yields an estimated test reliability coefficient of 0.885. Note that this estimate of test reliability is also above 0.60.
A total of 95 out of 136 survey questionnaires was received, for a survey response rate of 69.9%. According to Baker (1988, p. 181), this response rate is fairly respectable because "Surveys without follow-ups are unlikely to surpass 50 percent response rates." The following factors may have contributed to the response rate being higher than expected by the author of this project:

(1). Responses were solicited anonymously on matters that the managers would normally not want to make public.
(2). The survey questionnaire was limited to one page and designed to take less than five minutes to complete.
(3). The cover letter appealed to the respondent as a colleague.
(4). A commitment was made to send summary results of the survey back to the respondent.
(5). A stamped self-addressed envelope was included for the return of the completed survey.
(6). The respondents may have been interested in the subject of this project.
Survey Response Data

Please refer to appendix E for a table that summarizes responses to questions number 1.a. through 1.d. for demographic data. Interestingly, appendix E reveals that this research project had responses from a wide range of jurisdictions, sizes of jurisdiction, numbers of employees, and degrees of organizational autonomy. In addition, a number of responses had no answer given for size of jurisdiction, number of employees, or degree of autonomy. Rather than ignore such responses, a special code was used to account for no answer in the statistical analysis of those questions.

For completeness, appendix F documents the responses for questions 2.a. through 2.r., from the returned survey questionnaires. Note that the responses for individual questions involved a range of 1, 2, 3, 4, and 5. The data from appendixes E and F were used for the statistical analysis in this project, by generating 5-by-5 contingency, or cross-tabulation, tables to compare one variable with another.

In addition, appendix G provides summary categories for the open ended answers to the question "What do you consider to be the most important qualities or attributes for you to be an effective head of your computer service organization?" A total of 26 categories was developed based on the survey responses.
For information, the following quotes by category are from actual survey responses:

1. GOOD COMMUNICATION OR LISTENING SKILLS:
   "... ability to communicate, and not only listen but 'hear'."
   "Being able to listen & hear & communicate."
2. TECHNICAL SKILLS, COMPETENCE, OR KNOWLEDGE:
   "... knowledge of information systems/technology."
   "... strong technical knowledge given the rapid rate of change in the computer industry."
3. USER ORIENTATION:
   "To realize that we are a service organization and to keep the welfare of the user in mind."
   "... User orientation."
4. VISIONARY:
   "To have a clear vision for future planning & guidance of the information staff."
   "... future vision."
5. ADAPTABLE OR FLEXIBLE:
   "... be able to adapt to a changing technological environment."
   "Adaptability. Our organization is extremely dynamic."
6. GOOD STAFF OR EMPLOYEE RELATIONS:
   "Select good employees, provide them the necessary tools, and support them."
   "Involve staff . . ."
7. GOOD LEADERSHIP SKILLS:

"Leadership - staff and user community."

"- Strong leadership traits."

8. GOOD PEOPLE SKILLS:

"Strong communication & 'people' skills."

"Well rounded. People skills. . ."

9. CAN APPLY TECHNOLOGY TO MEET USER'S NEEDS:

"Understanding users needs and responding w/ appropriate technology."

"Being able to mix the needs of my customers against the ever changing technology available to information systems."

10. GOOD MANAGEMENT SKILLS:

"The ability to plan, organize, direct and control, communicate, motivate, and delegate."

11. UNDERSTANDS CUSTOMERS' OR USERS' NEEDS:

". . . understanding the user's business requirements."

12. CONSISTENT:

"Consistency - employees and users know exactly what to expect."

13. PERSISTENT, FIRM, OR TENACIOUS:

"Vision with persistence."

14. GOOD TEAM BUILDING SKILLS:

"To create a team concept between my clients and the MIS staff. To dissolve the 'us guys - those guys' mentality into a team mentality. To break down arti-
ficial organizational barriers."

15. SHOWS POLITICAL ACUMEN OR SENSITIVITY:

"The communications and political skills necessary to relate to elected and appointed department heads, the Chief Administrative Office and the board of supervisors. My employees have learned to expect this of me and I consider it my major responsibility."

16. FAIR:

"fairness . . ."

17. COST CONSCIOUS:

". . . supplying the demand at reasonable prices."

18. PERSUASIVE:

"Ability to persuade others . . ."

19. CAN BE TRUSTED:

"Integrity - so they know they can trust me & my staff."

20. OPEN MINDED:

"Open minded, fair . . ."

21. GOOD PLANNING SKILLS:

"Sound plan for the future."

22. KNOWS THE JURISDICTION'S PERSPECTIVE:

"To me a manager of MIS takes the executive view from the company executive, be it a City Manager, CEO or President of a Corporation."

23. ORIENTED TOWARDS GOALS:

"Goal oriented . . ."
24. UNDERSTANDS OR COMMITS TO MISSION:
   "Commit to mission; enable staff; interface to users."

25. HONEST:
   "Honesty; . . ."

26. DECISIVE:
   "Technically competent, decisive; . . ."
CHAPTER 7
DISCUSSION

Data Analysis

Recall that the independent and dependent variables for this research project are characterized as ordinal variables, while the extraneous variables are characterized as nominal and ordinal variables. Applying Iversen (1979, p. 114), the Chi-Square test can be used to determine the presence of a statistical relationship between any combination of ordinal and nominal variables. Thus, the first step in the data analysis was to apply the Chi-Square test for 5-by-5 contingency tables involving the various pairs of independent and dependent variables.

Further, the Gamma, Somers' d, and Tau-b tests are "three indices that are applicable to 'partially ordered' data that can be arranged in a contingency table with ordered categories" (Kahout, 1974, p. 212). Kahout (1974, p. 231) also states that the Gamma, Somers' d, and Tau-b test are indices, respectively, of a "weak monotone relationship," a "strictly monotone asymmetric relationship," and a "category-rank linear relationship." In other words, while the Chi-Square test can indicate the existence of a statistical relationship, it does not describe the nature of such a relationship. Additional statistical tests, such as the Gamma, Somers' d, and Tau-b
tests, are needed to complete the analysis.

The above statistical indices are used in this project, first to test for the existence of a relationship between two variables (with the Chi-Square test), and then to test for the nature of a statistical relationship (using the Gamma, Somers' d, and Tau-b tests). The results of those tests are provided as appendix H.

One of the first tasks in the data analysis is to determine if a statistical relationship exists between the extraneous variables (EV1 through EV4) and the dependent variables (DV1 and DV2). Referring to appendix H, the Chi-Square tests suggest that such statistical relationships are not significant at the p=0.01 level. Of these same relationships, only that between EV3 (number of employees) and DV1 (organizational effectiveness) is statistically significant at the p = 0.10 level; however, the strength of that relationship is very weak based on the results of the Gamma, Somers' d, and Tau-b tests. Interestingly, this same data analysis shows that no statistically significant relationship exists between the variables of organizational autonomy and effectiveness.

Another task of the data analysis is to determine if a statistically significant relationship exists between the dependent variables of organizational effectiveness and user satisfaction. Indeed, the results of the Chi-Square test for these two variables is significant at the p = 0.01 level. Furthermore, the results of the Gamma, Somers' d, and Tau-b
tests help to reveal the nature and strength of the statistical relationship. According to Marascuilo (1971, p. 412), a practical guide is to view a measure of association as weak if between 0 and 0.33, moderate if between 0.33 and 0.67, and strong if between 0.67 and 1.00. Applying Marascuilo's guide, the weak monotone, strictly monotone asymmetric, and category-rank linear relationships between the two dependent variables have moderate strength.

Based on the results of the statistical tests between the extraneous and dependent variables, the respondents are treated as an aggregate group when testing the hypotheses. In other words, the above results obviate the need to test the hypotheses for the effects of different values of each of the extraneous variables, EV1 through EV4.

### Hypothesis Testing

Recall that this project involves 32 hypotheses. To test each hypothesis, a Chi-Square test is first applied to see if the hypothesis is supported at the $p = 0.01$ level. In effect, the Chi-Square test is used to determine if the association between variables could be attributed to chance at a probability of 0.01 or less. If a hypothesis is supported at the $p = 0.01$ level, subsequent testing is needed to establish the type and strength of the statistical relationship between the vari-
ables in question. The tests used for subsequent testing are Tau-b for a weak monotone relationship, Gamma for a strictly monotone asymmetric relationship, and Somers' d for a category-rank linear relationship. In addition, Marascuilo's guide (1971, p. 412) is used for categorizing the strength of the relationship.

Each of the 32 hypotheses is tested, as described above, based on the test results that are given by appendix H. The results of the hypotheses tests are summarized by tables 3 and 4, below.
Table 3
Results of Testing Hypotheses That Involve the Dependent Variable of Organizational Effectiveness (DV1)

<table>
<thead>
<tr>
<th>Hyp no</th>
<th>Independent variable</th>
<th>Supported?</th>
<th>Statistical relationship</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Weak-monotone</td>
<td>Striktly-monotone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>rank-linear asymmetric</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>IV1</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IV2</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>IV3</td>
<td>Yes</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>IV4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>IV5</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>IV6</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>IV7</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>IV8</td>
<td>Yes</td>
<td>Moderate</td>
<td>Weak</td>
</tr>
<tr>
<td>9</td>
<td>IV9</td>
<td>Yes</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>10</td>
<td>IV10</td>
<td>No</td>
<td></td>
<td>Weak</td>
</tr>
<tr>
<td>11</td>
<td>IV11</td>
<td>Yes</td>
<td>Weak</td>
<td>Weak</td>
</tr>
<tr>
<td>12</td>
<td>IV12</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>IV13</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>IV14</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>IV15</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>IV16</td>
<td>Yes</td>
<td>Moderate</td>
<td>Weak</td>
</tr>
</tbody>
</table>

Note. "Supported?" means supported by the Chi-Square tests at the p = 0.01 level.
Table 4
Results of Testing Hypotheses That Involve the Dependent Variable of User Satisfaction (DV2)

<table>
<thead>
<tr>
<th>Hyp no</th>
<th>Independent variable</th>
<th>Supported?</th>
<th>Statistical relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Weak-monotone</td>
</tr>
<tr>
<td>17</td>
<td>IV1</td>
<td>Yes</td>
<td>Strong</td>
</tr>
<tr>
<td>18</td>
<td>IV2</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>19</td>
<td>IV3</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>20</td>
<td>IV4</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>IV5</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>IV6</td>
<td>Yes</td>
<td>Moderate</td>
</tr>
<tr>
<td>23</td>
<td>IV7</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>IV8</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>25</td>
<td>IV9</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>IV10</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>IV11</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>28</td>
<td>IV12</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>29</td>
<td>IV13</td>
<td>Yes</td>
<td>Moderate</td>
</tr>
<tr>
<td>30</td>
<td>IV14</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>IV15</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>32</td>
<td>IV16</td>
<td>Yes</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Note. "Supported?" means supported by the Chi-Square tests at the p = 0.01 level
Summarizing from tables 3 and 4, above, only 15 of the 32 hypotheses are supported by the Chi-Square tests at the $p = 0.01$ level. Of these 15 hypotheses, 8 demonstrate a moderate or strong statistical relationship between the variables in question. For the dependent variable of organizational effectiveness, such a statistical relationship exists with the independent variables of employee identification with the organization, trust, encouragement of learning, and user orientation by employees. Likewise, for the dependent variable of user satisfaction, such a statistical relationship exists with the independent variables of importance of user service, management by walking around, vision, and user orientation by employees.

Limitations of Project

Any research, such as this project, has limitations. For example, estimates of organizational effectiveness and user satisfaction are based on the self-ratings of the top managers, which may be somewhat suspect (Bass, 1981, p. 603). Furthermore, the survey respondents may try to give answers that are "contaminated by social desirability" (Bass, 1981, p. 603). In any event, the problem of social desirability was controlled to some extent by the fact that the survey responses were solicited anonymously. Despite such limitations, Baker (1988,
p. 196) suggests that survey questionnaires are still a useful form of research because they generate "data useful for a great range of study topics and lend themselves to wide-ranging forms of analyses."

Another limitation of this project is that the conclusions reached are only applicable to computer service organizations in local government. For example, research suggests that the type of employees in computer service organizations are different from employees in other organizations (Couger & Zawacki, 1980, p. 28). Thus, the uniqueness of employees suggests that the results of this research project should not be generalized to other types of organizations in the public sector.
A common stereotype of computer managers is that they tend to be technologists with little concern for social interaction and communications. Indeed, Couger and Zawacki (1980, p. 63) report survey results "that DP managers possess characteristics more similar to those of their subordinates than of their peers." Couger and Zawacki (1980, p. 63) further state that "DP managers may be viewed by his peers as more of 'a technician' than a member of the management team."

Such a stereotype is not supported by this research. Indeed, a review of the responses to open ended question number three on the survey questionnaire reveals that technical skills, competence, and knowledge are not considered to be the most important qualities or attributes for the top manager of a computer service organization to be effective. Rather, humanistic skills such as good communications are considered more important. The finding that these top managers value humanistic qualities and attributes was counter-intuitive and at variance with the typical stereotype of a computer manager.

Another finding is that the top managers cited qualities and attributes that would apply for general top management. For example, these top managers highlighted the qualities of being visionary, adaptable, flexible, consistent, persistent, tenacious, fair, trustworthy, persuasive, open minded,
and decisive. In addition, good team building skills were mentioned by some of the top managers. Interestingly, at least eight of the top managers specifically mentioned listening as an important quality or attribute. As an aggregate, the above responses were somewhat unexpected; however, this research suggests that these top managers value qualities and attributes that will help them to participate more fully as a member of the senior management team.

A third finding is that this group of top managers highlighted user orientation, understanding the user's needs, and being able to apply technology to meet the user's needs. Thus, a recommendation to the top manager of a computer service organization is to have a strong user orientation and to focus on applying technology to meet his or her users' business needs. In any event, a strong user orientation is a sensible reaction to increasing user computer literacy and demands.

With regard to the data analyses, a finding from this research is that the extraneous variables do not have a statistically significant relationship with the dependent variables of organizational effectiveness and user satisfaction. Thus, this population can be treated as an aggregate for further data analysis. In addition, the dependent variable of organizational effectiveness has a statistically significant relationship (p = 0.01) of moderate strength with the other dependent variable of user satisfaction.
Furthermore, a number of significant findings resulted from the tests of hypotheses. Specifically, this research project identified the following leadership principles as having statistically significant relationships with organizational effectiveness: employee identification with the organization, trust, encouragement of learning, organizational positioning in response to technological change, and user orientation by employees. The following leadership principles were also found to have a statistically significant relationship with the dependent variable of user satisfaction: importance of user service, employee identification with profession, employee identification with the organization, management by walking around, trust, organizational positioning in response to technological change, organizational positioning in response to political change, vision, user orientation by the top manager, and user orientation by the employees.

Moreover, the statistical analyses suggest that leadership does make a difference to a computer service organization. For example, the following leadership principles exhibited a moderate to strong statistical relationship with the dependent variables: importance of customer service, employee identification with the organization, management by walking around, trust, encouragement of learning, vision, and user orientation by employees.

Based on the above finding, a recommendation to top
managers of computer service organizations is to focus on those seven principles as a coordinated strategy to leadership. In particular, the top manager can practice management by walking around, engendering trust, encouraging learning, and promulgating a vision. Furthermore, the top manager could consciously try to shape the organization's culture to emphasize customer service, employee identification with the organization, and user orientation by employees. Shaping the culture may be possible by appropriately screening potential employees and selectively applying the reward system to encourage desired behaviors by the manager's subordinates.

On a negative note, this research finds that the following leadership principles do not demonstrate statistically significant relationships with either organizational effectiveness or user satisfaction: using a variety of leadership styles (situational leadership), coaching, conflict management, and interpersonal communications. Furthermore, the negative finding of this research for situational leadership is consistent with the research by Vecchio (1987, p. 450), which suggests that situational leadership theory may not be applicable for highly mature employees. Thus, this research casts some doubt on the viability of the above four leadership principles for a top manager of a computer service organization.

Finally, additional research is recommended. For example, a limitation of this research is that the data analysis is
based on self-ratings by the top managers. Thus, additional research is recommended that would use other measures of organizational effectiveness and user satisfaction, possibly based on a survey of the users. In addition, this research could be extended to include a study of other types of technical service organizations, such as planning or public works. Such additional research may be able to extend the findings of this project to a wider range of technical service organizations. Moreover, differences between types of technical service organizations could prove to be a fruitful area of inquiry.
CHAPTER 9
CONCLUSIONS

This research provides an interesting insight into the perceptions top managers of computer service organizations in local government have about leadership. In particular, some of the leadership principles discussed in the literature proved to have statistically significant relationships with the dependent variables of organizational effectiveness and user satisfaction. As a result, a recommendation from the research is that the top manager of a computer service organization should apply seven of the leadership principles as a coherent strategy. On the other hand, an unexpected finding of this project is that other leadership principles, such as using a variety of leadership styles, do not appear to have statistically significant relationships with either organizational effectiveness or user satisfaction. In addition, this research finds that leadership by the top manager does make a difference to the effectiveness of local government computer service organizations within the state of California. Finally, additional research is recommended to explore the role of leadership in other types of technical service organizations.
APPENDIX A

LIST OF 136 TOP MANAGERS
WHO WERE THE SUBJECTS OF THIS PROJECT

Cities (Total of 42)

1. Data Processing Director, City of Anaheim, P. O. Box 3222, Anaheim, CA 92803
2. Data Processing Division Manager, Administrative Services Department, City of Baldwin Park, 14403 Pacific Avenue, Baldwin Park, CA 91706.
3. Data Processing Manager, City of Bakersfield, 1501 Truxtun Avenue, Bakersfield, CA 93301.
4. Data Processing Director, City of Berkeley, 2180 Milvia, Berkeley, CA 94704.
5. Information Systems Director, City of Burbank, P.O. Box 6459, Burbank, CA 91502.
6. Data Processing Manager, City of Chula Vista, 276 4th Avenue, Chula Vista, CA 92010.
7. Data Processing Manager, Administrative Services - Finance, City of Colton, 650 North La Cadena Drive, Colton, CA 92324.
8. Information Systems Director, City of Concord, 1950 Parkside, Concord, CA 94519
9. Management Information Services Manager, City of Costa Mesa, P.O. Box 1200, Costa Mesa, CA 92628-1200.
10. Manager, MIS & Communications Division, Finance and Administrative Services Dept., City of Davis, 23 Russell Bl, Davis, CA 95616.
11. Data Processing Manager, City of El Monte, 11333 Valley Blvd., El Monte, CA 91731
12. Information Systems Director, City of Escondido, 201 N. Broadway, Escondido, CA 92025-2798
13. Data Processing Manager, City of Eureka, 531 K, Eureka, CA 95501.
14. Information Systems Division Manager, City of Fremont, 39700 Civic Center Drive, Fremont, CA 94538
15. Data Processing Division Manager, Administrative Services, City of Huntington Beach, 2000 Main Street, Huntington Beach, CA 92648.
16. Management Information Systems Manager, City of Inglewood, P. O. Box 6500, Inglewood, CA 90306
17. Information Services General Manager, City of Los Angeles, City Hall, 200 N. Main, Los Angeles, CA 90012.
18. Data Processing Manager, Information Services Bureau - 12th Floor, City of Long Beach, 333 W. Ocean Blvd., Long Beach, CA 90802.
20. Data Processing Manager, Finance Department, City of Newport Beach, P. O. Box 1768, Newport Beach, CA 92658-8915.
21. Data Processing Manager, Finance Department, City of
Oceanside, 321 N. Nevada St., Oceanside, CA 92054
22. Computer Services Manager, City of Orange, 300 E. Chapman Avenue, Orange, CA 92666.
23. Data Processing Manager, City of Palm Springs, 3200 E. Tahquitz Canyon Way, Palm Springs, CA 92262.
24. Information Resources Director, City of Palo Alto, P. O. Box 10250, Palo Alto, CA 94301.
25. Information Services Manager, Administrative Office, City of Pomona, P. O. Box 660, Pomona, CA 91769.
26. Data Processing Manager, City of Redding, 760 Parkview Avenue, Redding, CA 96001.
27. Data Processing Manager, Finance Department, City of Riverside, 3900 Main Street, Riverside, CA 92522.
28. Data Management Director, City of Sacramento, 915 I Street, Sacramento, CA 95814.
29. Information Systems Manager, Finance Department, City of Salinas, 200 Lincoln Avenue, Salinas, CA 93901
30. Data Processing Manager, City of San Bernardino, 300 North D Street, San Bernardino, CA 92418.
31. Data Processing Corp. Executive Vice President, City of San Diego, 1200 3rd Avenue, San Diego, CA 92101
32. Information Systems Director, City of San Jose, 801 North 1st Street, San Jose, CA 95111.
33. Data Processing Manager, City of San Mateo, 330 W. 20th Avenue, San Mateo, CA 94403.
34. Data Processing Manager, City of Santa Barbara, 735
Anacapa Street, Santa Barbara, CA 93101.
35. Data Processing Manager, Finance Department, City of Santa Cruz, 809 Center Street, Santa Cruz, CA 95060.
36. Manager, Computer Information Systems, City of Santa Monica, 1685 Main Street, Santa Monica, CA 90401.
37. Data Processing Manager, Administrative Services, City of Santa Rosa, 90 Santa Rosa Avenue, Santa Rosa, CA 95404.
38. Director, Management Information Services, City of Stockton, 425 N. El Dorado Street, Stockton, CA 95202.
39. Information Management Services Director, City of Sunnyvale, P. O. Box 3707, Sunnyvale, CA 94086-3707.
40. Information Systems Director, City of Torrance, 3031 Torrance Blvd., Torrance, CA 90503.
41. Manager, Management Information Systems, Finance Department, City of Vallejo, 555 Santa Clara Street, Vallejo, CA 94590.
42. Data Processing Manager, City of Watsonville, 215 Union, Watsonville, CA 95076.

Counties (Total of 39)

1. Data Processing Director, County of Alameda, County Administration Building, Oakland, CA 94612.
2. Data Processing Manager, County of Amador, 12200 Airport Road, Martell, CA 95654.
3. Data Processing Manager, County of Calaveras, 891 Mountain
Ranch Road, San Andreas, CA 95249.
4. Data Processing Director, County of Contra Costa, 30 Douglas Drive, Martinez, CA 94553.
5. Computer Services Manager, County of Del Norte, 450 H Street, Crescent City, CA 95531.
6. Manager, Information Services and Support, County of El Dorado, 330 Fair Lane, Placerville, CA 95667.
7. Computer Services Director, County of Fresno, 2220 Tulare Street, Fresno, CA 93721.
8. Manager, Data Processing Center, County of Humboldt, 839 4th, Eureka, CA 95501.
9. Data Processing Director, County of Imperial, County Administration Center, El Centro, CA 92243
10. Information Systems Manager, Data Processing Division, County of Kern, 1215 Truxtun Avenue, Bakersfield, CA 93301.
11. Data Processing Director, County of Kings, County Government Center, 1400 W. Lacey Blvd., Hanford, CA 93230
12. Data Processing Manager, County of Lake, 255 N. Forbes, Lakeport, CA 95453.
13. Data Processing Services Manager, County of Los Angeles, 9150 E. Imperial Highway, Downey, CA 90242.
14. Data Processing Manager, County of Marin, 4000 Civic Center Dr., San Rafael, CA 94903.
15. Data Processing Director, County of Mendocino, 175 S. School, Ukiah, CA 95482.
16. Management Information Director, County of Napa, 1195
3rd Street, Napa, CA 94559.

17. Data Systems Division Manager, General Services Agency, County of Orange, 10 Civic Center Plaza, Santa Ana, CA 92701.

18. Manager, Management Information Services, Administrative Services, County of Placer, 175 Fulweiler Avenue, Auburn, CA 95603.

19. Data Processing Manager, County of Plumas, 520 W. Main, Quincy, CA 95971.

20. Data Processing Director, County Administrative Center, County of Riverside, 4080 Lemon Street, Riverside, CA 92501.

21. Systems Data Processing Director, County of Sacramento, 700 H Street, Sacramento, CA 95814-1280.

22. Computer Operations Director, County of San Bernardino, 670 E. Gilbert Street, San Bernardino, CA 92415.

23. Information Systems Director, County of San Diego, 1600 Pacific Highway, San Diego, CA 92101.

24. Data Processing Director, County of San Joaquin, 24 S. Hunter Street, Room 5, Stockton, CA 95202.

25. Technical Services Director, County of San Luis Obispo, County Government Center, San Luis Obispo, CA 93408.


27. Data Processing Manager, County of San Mateo, 330 W. 20th Avenue, San Mateo, CA 94403.

28. Data Services Manager, County of Santa Barbara, 105 E.
Anapamu Street, Santa Barbara, CA 93101.
29. Data Processing Director, County of Santa Clara, 1555 Berger Drive, San Jose, CA 95112.
30. Data Processing Manager, County of Santa Cruz, Santa Cruz County Bldg., 701 Ocean Street, Santa Cruz, CA 95060.
31. Information Systems Director, County of Shasta, 1500 Court Street, Redding, CA 96001.
32. Data Processing Manager, County of Siskiyou, 311 4th, Yreka, CA 96097.
33. Data Processing Director, County of Sonoma, 2615 Pauline Dr., Santa Rosa, CA 95401.
34. Manager, Management Information Systems, County of Stanislaus, 1100 H Street, Modesto, CA 95354.
35. Data Processing Director, County of Sutter, 463 2nd Street, Yuba City, CA 95991
36. Data Processing Manager, County of Tuolumne, 2 S. Green, Sonora, CA 95370.
37. Data Processing Director, County of Tulare, 2800 W. Burrel, Visalia, CA 93291.
38. Information Systems Director, County of Ventura, 800 S. Victoria Avenue, Ventura, CA 93009.
39. Data Processing Services Manager, County of Yolo, 625 Court, Woodland, CA 95695.

Local School Districts (Total of 31)

1. Director, Management Information Systems, Alameda City
Unified School District, Administration Building, 2200 Central Avenue, Alameda, CA 94501-4465.
2. Coordinator, Management Information Services, Burbank Unified School District, 330 N. Buena Vista Street, Burbank, CA 91505.
4. Director, Computer Services, San Juan Unified School District, 3738 Walnut Avenue, P.O. Box 477, Carmichael, CA 95609-0477.
5. Director, Data Processing, ABC Unified School District, 16700 Norwalk Blvd., Cerritos, CA 90701.
7. Director, Data Processing, Mt. Diablo Unified School District, 1936 Carlotta Drive, Concord, CA 94519-1397.
8. Coordinator, Data Services, Corona-Norco Unified School District, 300 Buena Vista Avenue, Corona, CA 91720-1937.
9. Data Processing Manager, MIS, Newport-Mesa Unified School District, 2985C Bear Street, Costa Mesa, CA 92626.
12. Director, Computer Services, Fresno Unified School
District, Education Center, Tulare and M Streets, Fresno, CA 93721.

13. Director, Data Processing, Glendale Unified School District, 223 N. Jackson Street, Glendale, CA 91206-4380.

14. Director, Data Processing, Hacienda La Puente Unified School District, 15959 E. Gale Avenue, P.O. Box 1217, La Puente, CA 91749-1217.

15. Director, Data Processing, Long Beach Unified School District, 701 Locust Avenue, Long Beach, CA 90813.


17. Director, Data Processing, Madera Unified School District, Administration Building, 1902 Howard Road, Madera, CA 93637.

18. Director, Information Services, Saddleback Valley Unified School District, 25631 Diseno Drive, Mission Viejo, CA 92691.

19. Director, Information Services, Placentia Unified School District, 1301 E. Orangethorpe Avenue, Placentia, CA 92670.

20. Director, Data Processing, Pleasanton Unified School District, 4665 Bernal Avenue, Pleasanton, CA 94566-7498.

21. Director, Management Information Systems, Pomona Unified School District, 800 S. Carey Avenue, P.O. Box 2900, Pomona, CA 91769.

22. Director, Data Processing, Rialto Unified School District, 182 E. Walnut, Rialto, CA 92376.
23. Director, Information Services, Richmond Unified School District, 1108 Bissell Avenue, Richmond, CA 94802.

24. Director, Data Processing, Riverside Unified School District, 3380 14th Street, P.O. Box 2800, Riverside, CA 92516.


26. Executive Director, Information Services Bureau, San Diego City Unified School District, 4100 Normal Street, San Diego, CA 92103.

27. Computer Center Manager, Santa Ana Unified School District, 3321 S. Fairview, Santa Ana, CA 92704.

28. Director, Information and Technology, Simi Valley Unified School District, 875 E. Cochran Street, Simi Valley, CA 93065.

29. Director, Information Services, Stockton City Unified School District, 701 N. Madison Street, Stockton, CA 95202.

30. Administrator, Data Processing Services, Tustin Unified School District, 300 South C Street, Tustin, CA 92680.

31. Director, Computer Services, New Haven Unified School District, 34200 Alvarado-Niles Road, Union City, CA 94587.

County Education Offices and Superintendents of Schools
(Total of 24)

1. Director, Data Processing, Office of the Alameda County Superintendent of Schools, 313 W. Winton Avenue, Hayward, CA
2. Director, Educational Data Processing Center, Office of the Fresno County Superintendent of Schools, County Schools Administration Building, 2314 Mariposa Street, Fresno, CA 93721.

3. Data Processing Manager, Office of the Humboldt County Superintendent of Schools, 901 Myrtle Avenue, Eureka, CA 95501.

4. Data Processing Manager, Office of the Imperial County Superintendent of Schools, 1398 Sperber Road, El Centro, CA 92243.

5. Director, Data Processing and Testing Services, Division of Administrative and Finance Services, Office of the Kern County Superintendent of Schools, 5801 Sundele Avenue, Bakersfield, CA 93309-2924.

6. Manager, Data Processing/District Services, Office of the Kings County Superintendent of Schools, Government Center, 1144 W. Lacey Blvd., Hunford, CA 93230.

7. Director, Regional Data Processing Center, Office of the Los Angeles County Superintendent of Schools, 9300 Imperial Highway, Downey, CA 90242-2890.

8. Manager, Data Processing Services, Office of the Madera County Superintendent of Schools, 28123 Avenue 14, Madera, CA 93638.

9. Director, Data Processing, Office of the Monterey County Superintendent of Schools, 901 Blanco Cir., P.O. Box 80851,
Salinas, CA 93912.
10. Director, Data Processing Services, Office of the Orange County Superintendent of Schools, 200 Kalmus Drive, P.O. Box 9050, Costa Mesa, CA 92628.
11. Director, Information Services, Office of the Placer County Superintendent of Schools, 360 Nevada Street, Auburn, CA 95603.
12. Director, Data Processing, Office of the Riverside County Superintendent of Schools, 3939 13th Street, P.O. Box 868, Riverside, CA 92502.
13. Director, Data Processing, Office of the Sacramento County Superintendent of Schools, 9738 Lincoln Village Drive, Sacramento, CA 95827.
14. Administrator, Data Processing, Office of the San Bernardino County Superintendent of Schools, 601 North E Street, San Bernardino, CA 92410-3093.
15. Director, Regional Data Processing Center, Office of the San Diego County Superintendent of Schools, 6401 Linda Vista Road, San Diego, CA 92111-7399.
16. Director, Data Processing, Office of the San Joaquin County Superintendent of Schools, Gaylord A. Nelson Education Center, 2901 Arch-Airport Road, P.O. Box 213030, Stockton, CA 95213-9030.
17. Administrator, Data Processing Center, Office of the San Mateo County Superintendent of Schools, San Mateo County Office of Education, 333 Main Street, Redwood City, CA 94063-
1782.
18. Assistant Superintendent, Business and Data Processing Services, Office of the Santa Barbara County Superintendent of Schools, 4400 Cathedral Oaks Road, P.O. Box 6307, Santa Barbara, CA 93160-6307.
19. Computer Operations Manager, Santa Barbara County Education Office, 700 E. Anapuma, Santa Barbara, CA 93103.
20. Director, Regional Education Center for Automated Processing, Office of the Santa Clara County Superintendent of Schools, 100 Skyport Drive, San Jose, CA 95115.
21. Manager, Data Processing Services, Office of the Santa Cruz County Superintendent of Schools, 809 Bay Avenue, Suite H, Capitola, CA 95010.
22. Director, Data and Word Processing, Office of the Shasta County Superintendent of Schools, 1644 Magnolia Avenue, Redding, CA 96001-1599.
23. Director, Data Processing Services, Business Services Division, Office of the Stanislaus County Superintendent of Schools, 801 County Center Three Ct., Modesto, CA 95355.
24. Director, Regional Educational Data Processing Center, Office of the Ventura County Superintendent of Schools, 535 E. Main Street, Ventura, CA 93009.
APPENDIX B
SURVEY QUESTIONNAIRE

1. Demographic data (please circle or fill in your response).
   a. Is your organization part of a city, county, local school district, county education office, or county superintendent of schools?

   
<table>
<thead>
<tr>
<th>CITY</th>
<th>COUNTY</th>
<th>LOCAL SCHOOL DISTRICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTY EDUCATION OFFICE</td>
<td>COUNTY SUPERINTENDENT OF SCHOOLS</td>
<td></td>
</tr>
</tbody>
</table>

   b. Size of city, county, local school district, county education office, or county superintendent of schools?

<table>
<thead>
<tr>
<th>SMALL</th>
<th>MEDIUM</th>
<th>LARGE</th>
</tr>
</thead>
</table>

   c. Number of employees in your organization?

   d. Placement of your organization within the city, county, local school district, county education office, or county superintendent of schools?

   | AUTONOMOUS DEPARTMENT | UNIT OF ANOTHER DEPARTMENT |

2. Please circle the number that describes how you feel for each of the following questions: 1 = strongly agree; 2 = agree; 3 = disagree; 4 = strongly disagree; 5 = undecided

   a. My organization is effective: 1 2 3 4 5
   b. Service to users is important to my organization: 1 2 3 4 5
   c. Users are satisfied with computer services being provided by my organization: 1 2 3 4 5
   d. My employees identify closely with their profession: 1 2 3 4 5
   e. My employees identify closely with my organization: 1 2 3 4 5
   f. Leadership is important for me to be an effective head of my organization: 1 2 3 4 5
   g. I use a variety of leadership styles: 1 2 3 4 5
   h. I frequently meet in my employees' workspaces: 1 2 3 4 5
   i. My employees view me as a coach: 1 2 3 4 5
   j. My employees trust me: 1 2 3 4 5
   k. Learning is encouraged in my organization: 1 2 3 4 5
   l. I need to be effective in managing conflicts: 1 2 3 4 5
   m. I am positioning my organization to respond to external technological changes: 1 2 3 4 5
n. I am positioning my organization to respond to external political changes: 1 2 3 4 5
o. I have clearly communicated a vision for the future of my organization, to my employees: 1 2 3 4 5
p. Interpersonal communications is important for me to be an effective head of my organization: 1 2 3 4 5
q. I have strong orientation to my users: 1 2 3 4 5
r. My organization's employees have a strong orientation to users of our computer services: 1 2 3 4 5

3. What do you consider to be the most important qualities or attributes for you to be an effective head of your computer service organization?
Data Processing Director,  
County of Sutter,  
463 2nd Street,  
Yuba City, CA 95991  

Dear Sir or Madam:  

As part of my Master's Degree in Public Administration at California State University, San Bernardino, I am carrying out a research project to evaluate the role of leadership for a computer services organization in local government. This area is of special interest to me because I am currently the head of a computer services organization for the U.S. Navy. 

As a fellow colleague, I would very much appreciate your help. Please complete the following survey questionnaire and return it to me by February 21, 1993. Your prompt response will help me graduate by June, 1993.

Since your time is valuable, I have kept this questionnaire to one page maximum. If you have any questions about this survey, please call me at telephone number (909) 273-5318 during normal work hours. For your convenience I have included a stamped, self-addressed envelope for return of the survey questionnaire.

A copy of the summary results of this survey will be forwarded to you by April 15, 1993. Thank you in advance for taking the time to fill out and return this survey questionnaire.

Sincerely yours,  

Robert B. Beavan
APPENDIX D
INSTRUMENTS CONSIDERED FOR THIS PROJECT

Instruments That Have Been Used In Studies Related to Leadership

<table>
<thead>
<tr>
<th>No</th>
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<th>Reference</th>
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<tr>
<td>1</td>
<td>Stogdill and Shartle's RAD Scale</td>
<td>(Bass, 1981, p. 236)</td>
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<td>Stogdill and Shartle's Work</td>
<td>(Bass, 1981, p. 279)</td>
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<td></td>
<td>Analysis Forms</td>
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<td>3</td>
<td>The Profile of Organizational Characteristics</td>
<td>(Bass, 1981, p. 302)</td>
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<td>5</td>
<td>Leader Behavior Description Questionnaire (LBDQ)</td>
<td>(Bass, 1981, p. 359)</td>
</tr>
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<td>6</td>
<td>Supervisory Behavior Description Questionnaire (SBDQ)</td>
<td>(Bass, 1981, p. 351)</td>
</tr>
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<td>7</td>
<td>Form XII - LBDQ</td>
<td>(Bass, 1981, p. 359; Vecchio, 1987, p. 447)</td>
</tr>
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<td>Instrument</td>
<td>Reference</td>
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<td>---------------------------------------------------</td>
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<td>11</td>
<td>Fleishman's Leadership Opinion Questionnaire</td>
<td>(Bass, 1981, p. 370)</td>
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<td>12</td>
<td>Miner Sentence Completion Scale</td>
<td>(Bass, 1981, p. 400)</td>
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<td>14</td>
<td>Hackman and Oldham's Index</td>
<td>(Bass, 1981, p. 445)</td>
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<td>15</td>
<td>Leader-Member Exchange</td>
<td>(Vecchio, 1987, p. 447)</td>
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<td>19</td>
<td>Leadership Skills Inventory</td>
<td>(Karnes &amp; D'Ilio, 1988, p. 263).</td>
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## APPENDIX E

### SUMMARY OF DEMOGRAPHIC RESPONSE DATA

Summary Table for Demographic Response Data

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Note.
1. Jurisdiction, size, # employees, and autonomy correspond, respectively, to questions l.a., l.b., l.c., l.d., and l.e. from the survey questionnaire (Appendix B). In addition, a dash mark (-) indicates that no answer was given for that question. In the statistical analysis, these dash marks were coded and treated as missing answers.
2. For the category of jurisdiction, 1, 2, 3, 4, and 5, correspond, respectively, to City, County, Local School District, County Education Office, and County Superintendent of Schools.
3. Size refers to the size of the jurisdiction.
4. In this category, Autonomous corresponds to an Autonomous Department, while Unit corresponds to a Unit of Another Department.
<table>
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<tr>
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<tr>
<td>9</td>
<td>Can apply technology to meet user's needs</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Good management skills</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>Understands customers' or users' needs</td>
<td>8</td>
</tr>
</tbody>
</table>

**Note.** 1. These categories are derived from responses to question number 3 on the survey questionnaire, a copy of which is provided as Appendix B.
2. Survey responses to question number 3 are categorized if given by more than one respondent. For this appendix, multiple comments in one category by a single respondent are treated as being mentioned one time.
<table>
<thead>
<tr>
<th>No</th>
<th>Quality or attribute</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Consistent</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>Persistent, firm, or tenacious</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>Good team building skills</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>Good political acumen or sensitivity</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>Fair</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>Cost conscious</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>Persuasive</td>
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</tr>
<tr>
<td>19</td>
<td>Trustworthy</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
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<tr>
<td>21</td>
<td>Good planning skills</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>Knowledge of the Jurisdiction's perspective</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>Orientation towards goals</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>Understanding of commitment to mission</td>
<td>2</td>
</tr>
<tr>
<td>25</td>
<td>Honest</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>Decisive</td>
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</table>
SUMMARY OF STATISTICAL TESTS

Summary Table for Statistical Tests on the Survey Response Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistical tests^</th>
<th>Values for other tests</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Chi-Square^</td>
<td>Gamma</td>
</tr>
<tr>
<td></td>
<td>Value</td>
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</tr>
<tr>
<td>DV1 EV1</td>
<td>3.283</td>
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<tr>
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<td>DV1 EV4</td>
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<tr>
<td>DV1 IV1</td>
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</tr>
<tr>
<td>DV1 DV2</td>
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</table>

Note.
1. The Gamma, Somers' d, and Tau-b are inappropriate as tests for the nature of the statistical relationship between a nominal and an ordinal variable, such as between DV1 and EV1. In any event, the Chi-Square tests suggest that statistical relationships involving the nominal variables were not significant at the p = .01 level.
2. Cells in the 5-by-5 contingency tables are combined for the Chi-Square tests to compensate for marginal totals going to 0, thus the degrees of freedom varied from 2 to 16.
3. The Somers' d test is asymmetric with rows dependent.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistical tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chi-Square</td>
</tr>
<tr>
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<td>Value</td>
</tr>
<tr>
<td>DV1</td>
<td>IV2</td>
</tr>
<tr>
<td>DV1</td>
<td>IV3</td>
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<td>IV16</td>
</tr>
<tr>
<td>DV2</td>
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</tr>
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<td>Statistical tests</td>
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<td>IV1</td>
</tr>
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REFERENCES


