INFORMATION TO USERS

This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.

2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in "sectioning" the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.
CONFLICT IN THE MANAGEMENT OF EDUCATION, BUSINESS, AND MILITARY PROJECTS: A COMPARATIVE STUDY

The Ohio State University

Ph.D. 1980

University Microfilms International

Copyright 1980 by Stoycheff, Peter Andon

All Rights Reserved
PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark \( \checkmark \).

1. Glossy photographs ______
2. Colored illustrations ______
3. Photographs with dark background ______
4. Illustrations are poor copy ______
5. Print shows through as there is text on both sides of page ______
6. Indistinct, broken or small print on several pages \( \checkmark \) throughout ______
7. Tightly bound copy with print lost in spine ______
8. Computer printout pages with indistinct print ______
9. Page(s) ______ lacking when material received, and not available from school or author ______
10. Page(s) ______ seem to be missing in numbering only as text follows ______
11. Poor carbon copy ______
12. Not original copy, several pages with blurred type ______
13. Appendix pages are poor copy ______
14. Original copy with light type ______
15. Curling and wrinkled pages ______
16. Other ________________________________
CONFLICT IN THE MANAGEMENT OF EDUCATION, BUSINESS, AND MILITARY PROJECTS: A COMPARATIVE STUDY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Peter Andon Stoycheff, B.A., M.S., M.S.

* * * * *

The Ohio State University

1980

Reading Committee: Dr. Desmond L. Cook

Dr. James W. Altschuld

Dr. William W. Wayson

Approved By

Adviser

Faculty of Educational Foundations and Research
DEDICATION

To those of Macedonian heritage, there are so few of us;

To my family, who gave me security and didn't, who started, armed and kept me on the way;

To my grandfather, Peter A. Stoycheff, an unforgettable character, who was a true free spirit and taught me to thirst for knowledge;

To four women associated with Florida, who taught me things that I did not know I wanted to know.
ACKNOWLEDGEMENTS

I am especially grateful to Dr. Desmond L. Cook, my major advisor, who was instrumental in the design and conduct of the study. He gave many hours, much effort and encouragement to ensure the success of the effort.

Special thanks is due to Dr. William Wayson and Dr. James Altschuld, who served on my dissertation committee and always offered valuable advice and encouragement. Special thanks is also due to Dr. Robert Lange and Dr. Gregory Trzebiatowski, who were formal members of the dissertation committee, and offered valuable encouragement, advice, and help during the early stages of the study.

Thanks is due Dr. Virgil Blanke and Dr. Roy Larmee for encouragement and help in my development of self.

My gratitude is due Dr. Hans Thamhain, Dr. David Wilemon, Karl Eschmann, Terry Lee and Dr. John Adams for information, aid, encouragement and permission directed toward this study from them and their studies. Special thanks is due especially to Dr. Thamhain for his data, timely aid, and encouragement.

The study would not have been possible without the assistance of Mrs. June Stoycheff. With provision of
innumerable hours of typing, editing, condensing, advising, and encouraging. I consider her almost a co-author of the study.

Special thanks is due my brother, Dr. James Stoycheff and his family, my brother John Stoycheff, Val Behm, Dr. Rita Bova and Pam Conrad for special assistance directed toward completing the study.

Appreciation is extended to Marva Evans, who typed the final drafts, and Peter D. Stoycheff, for drafting the figures.

Thanks are due my parents, Mr. and Mrs. Andon Stoycheff, who provided continual encouragement and financial support over many years.

The study could not have been achieved without "a little help and encouragement from my friends." Thanks for help and encouragement is due Kitty Zwissler, Bonnie Bell Willis, Naomi Ulrich, Celeste Taylor, Carol Strine, Lynn Sopko, Chuck Peters, Panzoola Fran Packard, Penny Laughlin, Penny Kentosh, Carol Kane, Jim Henle, Jean Girvis, Mandu Golhar, Cindy Gilmore, Dotty Gifford, Cathy Harley, Peg Fischer, Bob Dorsey, Tom Clifford and Donna Agresta.

Thanks for encouragement over the years is due my friends, Tim and Delaney O'Mea, Toni Hamilton, Michelle Schlesinger Wright, Elaine Griffin, Paul and Nancy Coverdell, Mary James Adkinson, Betty and Fred Lines,
Marianna Lines, Larry and Charlotte Dickinson, Sam Laffoday, The Carter Family, Henry and Rita Kaufmann, W. Neil Shelton, Jim Swanson, Walt Mathews, Allen Scott, Bill and Betty Wright, Bill and Mary Ann White, Marty Joy, Gordon Joy, Dotty Odraski, Sandy Corbin, Julie Morrisey, Tim and Suzie Rosenbush, Diane Reinhart, Barbara McCool, Bob Spillman, Floyd McKinney, Janie Jones, Pat White, Jan Lave, Mike and Cathy Baker, Nicki Potts, Trish Barlow, Ted Haaland, Doris Woodie, Randy Stover, Penny Purviance, Charles Hall, Karen Klingbiel, Ready Freddie Bob Fredrick, Ann and Desdamona Sayers, Greg Thomas, Gloria Bistoff, Sandy Cree, Max Stokes, Jeanie Huelsman, Terry Bogert, Lou and Sharon DeMicco, Garlina Bauer, Harry and June Payne, Kate Oklok, John and Jan Looman, Sally Oddi, Diane Biggs, Gay Pinnell, Leni Golaboff, The Theodotou Family, Jane Karras, The Hess Boys, Ron and Cathy Keller, Sharon Tanner, Marti Sweterlitsch, Jim Aska, Honey Louise Cook, The ABD group, Dotty's group, all the present and past students, faculty and secretarial staff connected with the Faculty of Development and subsequently the Faculty of Foundations and Research and all other friends not specifically mentioned by name.

Special thanks are due my dearest departed friend, Cathy Foss. It is done and I miss your friendship. Thank you for keeping me at the writing when you were here.
July 17, 1936 .............. Born-Columbus, Ohio

1958 ....................... B.A. Ohio Wesleyan University, Delaware, Ohio

1958-1959 .................. Teaching Assistant, Department of Physics, Ohio Wesleyan University, Delaware, Ohio

1959-1965 .................. Research Associate, Department of Physics and Institute of Molecular Biophysics, Florida State University, Tallahassee, Florida

1964 ....................... M. Sc., The Florida State University, Tallahassee, Florida

1965-1969 .................. Professor, DeKalb College, Clarkston, Georgia

1966 ....................... M. Sc., The Florida State University, Tallahassee, Florida

1969-1970 .................. Fellow, The Florida State University, Tallahassee, Florida

1970-1973 .................. Research Associate, The Ohio State University, Columbus, Ohio

1973-1979 .................. Consultant, P. A. Stoycheff Enterprises, Delaware, Ohio and Meta Management, Columbus, Ohio. Partner, A. Stoycheff Farms, Ostrander, Ohio
PUBLICATIONS


Numerous unpublished papers and reports.

FIELDS OF STUDY

Major Field: Education

Studies in Project Management. Professor Desmond L. Cook

Studies in Systems. Professors Desmond L. Cook and Gregory Trzebiatowski

Studies in Research and Evaluation. Professor Robert Lange

Studies in Educational Change and Administration. Professors William Wayson, Virgil Blanke, and Roy Larmee
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>VITA</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiv</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. PROBLEM STATEMENT</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>The Nature of Projects</td>
<td>2</td>
</tr>
<tr>
<td>Project Characteristics</td>
<td>5</td>
</tr>
<tr>
<td>Concept of Project Management</td>
<td>8</td>
</tr>
<tr>
<td>Conceptual Framework</td>
<td>16</td>
</tr>
<tr>
<td>The Nature of Conflict</td>
<td>21</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>35</td>
</tr>
<tr>
<td>II. REVIEW OF RELATED RESEARCH</td>
<td>43</td>
</tr>
<tr>
<td>Introduction</td>
<td>43</td>
</tr>
<tr>
<td>State of Art Studies of Conflict</td>
<td>43</td>
</tr>
<tr>
<td>Human Management Skills of Project Managers</td>
<td>45</td>
</tr>
<tr>
<td>Human Relations in Education</td>
<td>50</td>
</tr>
<tr>
<td>Projects</td>
<td>54</td>
</tr>
<tr>
<td>Conflict in the Management of Projects</td>
<td>70</td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>III. METHODS AND PROCEDURES</td>
<td>74</td>
</tr>
<tr>
<td>Introduction</td>
<td>74</td>
</tr>
<tr>
<td>Instrument Development</td>
<td>74</td>
</tr>
<tr>
<td>The Population and Sample</td>
<td>82</td>
</tr>
<tr>
<td>Data Collection</td>
<td>87</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>97</td>
</tr>
<tr>
<td>IV. FINDINGS AND THEIR INTERPRETATIONS</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Introduction..........................</td>
<td>106</td>
</tr>
<tr>
<td>Research Question I - Conflict</td>
<td></td>
</tr>
<tr>
<td>Comparisons...........................</td>
<td>107</td>
</tr>
<tr>
<td>Research Question II - Life Cycle</td>
<td></td>
</tr>
<tr>
<td>Phase Conflict.......................</td>
<td>121</td>
</tr>
<tr>
<td>Research Question III - Conflict</td>
<td></td>
</tr>
<tr>
<td>Resolution Modes......................</td>
<td>133</td>
</tr>
<tr>
<td>Interpretation of Findings...........</td>
<td>140</td>
</tr>
<tr>
<td>Summary of Findings..................</td>
<td>168</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V. CONCLUSIONS AND RECOMMENDATIONS FOR PRACTICE AND FURTHER RESEARCH</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction.........................</td>
<td>170</td>
</tr>
<tr>
<td>Purpose.............................</td>
<td>170</td>
</tr>
<tr>
<td>Research Questions...............</td>
<td>171</td>
</tr>
<tr>
<td>Conclusions........................</td>
<td>172</td>
</tr>
<tr>
<td>Recommendations for Practice...</td>
<td>174</td>
</tr>
<tr>
<td>Recommendations for Further Research...........</td>
<td>175</td>
</tr>
</tbody>
</table>

APPENDIXES

A. Data Collection Instrument for Education.......................... 178
B. Data Collection Instrument for Business............................ 190
C. Data Collection Instrument for the Military....................... 196
D. Definition of Terms.................................................. 205
E. Initial Mailing Cover Letters................................. 208
F. First Follow-up Letter............................................. 211
G. Second Follow-up Letter........................................... 213
H. Third Follow-up Letter............................................ 215
I. Humorous Follow-up Letter........................................ 217
J. Additional Military Data .............. 220
K. Additional Education Data ............ 227
L. Approval Letters ...................... 232

BIBLIOGRAPHY .......................... 238
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Seven Potential Sources of Conflict in Project Management</td>
<td>29</td>
</tr>
<tr>
<td>2.</td>
<td>Five Interfacing Parties to Potential Conflict</td>
<td>31</td>
</tr>
<tr>
<td>3.</td>
<td>Five Conflict Handling and Resolution Modes</td>
<td>32</td>
</tr>
<tr>
<td>4.</td>
<td>Aphroisms Describing Five Modes of Conflict Resolution</td>
<td>33</td>
</tr>
<tr>
<td>5.</td>
<td>Number of ESEA Title III Projects Operating in 1975, Number of Projects in the Sampling Frame, and Number of Projects in the Sample, by States, for the United States</td>
<td>88</td>
</tr>
<tr>
<td>6.</td>
<td>Number of Projects Sampled and Number of Returns Utilized over ESEA Title III Program Management Section</td>
<td>95</td>
</tr>
<tr>
<td>7.</td>
<td>Number of Projects Sampled and Number of Returns Utilized by the Sex of Project Directors</td>
<td>95</td>
</tr>
<tr>
<td>8.</td>
<td>Number of Projects Sampled and the Number of Returns Utilized by Size of School District</td>
<td>96</td>
</tr>
<tr>
<td>9.</td>
<td>Mean Intensities of Conflict Sources with Interacting Parties of Business, Military, and Education Projects</td>
<td>108</td>
</tr>
<tr>
<td>10.</td>
<td>Mean Intensities and Rank for Conflict Sources of Business, Military, and Education Projects</td>
<td>113</td>
</tr>
<tr>
<td>11.</td>
<td>Analysis of Variance Results from Sources of Conflict in the Education, Business, and Military Environments</td>
<td>118</td>
</tr>
<tr>
<td>12.</td>
<td>Measure of Relative Intensity of Conflict Sources over the Four Life-Cycle Phases for Business and Military Environments</td>
<td>xi</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Education Projects Based on Five Interfacing Parties</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>13. Measure of Relative Intensity of Conflict Sources over the Four</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Life-Cycle Categories of Military Programs Based upon Five Interacting Parties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Rank of the Intensity of Conflict Sources over the Four Life Cycle</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Phases for Education, Business, and Military Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Kruskal-Wallis H Determination of the Ranked Conflict Sources for</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>the Four Life-Cycle Phases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Percent of Education, Military, and Business Project Managers</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Preferring or Rejecting Modes of Conflict Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Rank of Percentage of Education, Military, and Business Project</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Managers Preferring or Rejecting Modes of Conflict Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Comparison of Ranked Sources of Conflict between Business and</td>
<td>221</td>
<td></td>
</tr>
<tr>
<td>Military Managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Mean Intensities of Conflict Sources with Interfacing Parties of</td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>Business and Military Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Summary of Analysis of Variance of Conflict over Schedules for</td>
<td>228</td>
<td></td>
</tr>
<tr>
<td>Education, Business and Military Project Managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Summary of Analysis of Variance of Conflict over Project</td>
<td>228</td>
<td></td>
</tr>
<tr>
<td>Priorities for Education, Business and Military Project Managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Summary of Analysis of Variance of Conflict over Manpower</td>
<td>228</td>
<td></td>
</tr>
<tr>
<td>Resources for Education, Business and Military Project Managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>23.</td>
<td>Summary of Analysis of Variance of Conflict over Specifications for Education, Business and Military Project Managers</td>
<td>229</td>
</tr>
<tr>
<td>25.</td>
<td>Summary of Analysis of Variance of Conflict over Cost and Cost Objectives for Education, Business and Military Project Managers</td>
<td>229</td>
</tr>
<tr>
<td>26.</td>
<td>Summary of Analysis of Variance of Personality Conflict for Education, Military Project Managers</td>
<td>230</td>
</tr>
<tr>
<td>27.</td>
<td>Means and Standard Deviations of Mean Intensities of Conflict Sources with Interacting Parties of Business, Military and Education Projects</td>
<td>231</td>
</tr>
</tbody>
</table>

xiii
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>The Conflict Episode</td>
<td>26</td>
</tr>
<tr>
<td>3.</td>
<td>Model of Primary Interacting Relationships of a Project and its Environment.</td>
<td>36</td>
</tr>
<tr>
<td>4.</td>
<td>Mean Intensities of Conflict Sources with Interacting Parties of Business Projects</td>
<td>59</td>
</tr>
<tr>
<td>5.</td>
<td>Measures of Relative Intensity of Conflict Sources over the Four Life Cycle Phases for Business Projects Based on Five Groups</td>
<td>61</td>
</tr>
<tr>
<td>6.</td>
<td>Trends of Conflict Intensity over the Four Project Life Cycle Stages of Business Projects</td>
<td>62</td>
</tr>
<tr>
<td>7.</td>
<td>Modes of Conflict Resolution Preferred or Rejected by Business Project Managers</td>
<td>64</td>
</tr>
<tr>
<td>8.</td>
<td>Mean Intensities of Conflict Sources with Interacting Parties of Military and Business Projects</td>
<td>65</td>
</tr>
<tr>
<td>9.</td>
<td>Relative Intensity of Conflict Sources over the Four Life Cycle Phases for Military Projects Based on six Inter-facing Parties</td>
<td>66</td>
</tr>
<tr>
<td>10.</td>
<td>Comparison of Rank Order Profiles of Source Intensities over the Four Life Cycle Phases in Military and Business Projects</td>
<td>67</td>
</tr>
<tr>
<td>11.</td>
<td>Modes of Conflict Resolution Preferred or Rejected by Military and Business Project Managers</td>
<td>69</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>12.</td>
<td>Mean Intensities of Conflict Sources with Interacting Parties of Education, Military, and Business Projects</td>
<td>110</td>
</tr>
<tr>
<td>13.</td>
<td>Mean Intensities for Conflict Sources over Education, Military, and Business Project Life-Cycles</td>
<td>115</td>
</tr>
<tr>
<td>14.</td>
<td>Mean Intensities for Conflict Sources over Business, Military, and Education Project Life-Cycles</td>
<td>116</td>
</tr>
<tr>
<td>15.</td>
<td>Measure of Relative Intensity of Conflict Sources over the Four Life-Cycle Phases for Education Projects Based on Five Groups</td>
<td>125</td>
</tr>
<tr>
<td>16.</td>
<td>Comparison of Rank Order Profiles of Conflict Source Intensities over the Four Life Cycle Phases in Business, Military, and Education Projects</td>
<td>130</td>
</tr>
<tr>
<td>17.</td>
<td>Modes of Conflict Resolution Preferred or Rejected by Education, Military, and Business Project Managers</td>
<td>136</td>
</tr>
<tr>
<td>18.</td>
<td>Mean Conflict Intensity Profile with Interfacing Parties in Category I (Conceptual/Validation or Planning Phase) of Military Projects</td>
<td>223</td>
</tr>
<tr>
<td>19.</td>
<td>Mean Conflict Intensity Profile with Interfacing Parties in Category II (Full-Scale Development or Preparation Phase) of Military Projects</td>
<td>224</td>
</tr>
<tr>
<td>20.</td>
<td>Mean Conflict Intensity Profile with Interfacing Parties in Category III (Production or Operation Phase) of Military Projects</td>
<td>225</td>
</tr>
<tr>
<td>21.</td>
<td>Mean Conflict Intensity Profile with Interfacing Parties in Category IV (Deployment or Termination Phase) of Military Projects</td>
<td>226</td>
</tr>
</tbody>
</table>
CHAPTER I
PROBLEM STATEMENT

Introduction
This study examined the interactions, sources, timing, resolution modes and intensities of conflict in the management of education projects. The intensity of perceived conflict, measures of conflict intensity, timing and resolution methods preferred or rejected by educational project directors were compared to earlier studies reported in business and the military in order to identify and present a better understanding of the human relations skills utilized in managing projects across the three environments. The study thus aids in drawing a clearer picture of factors contributing to better project management.

This chapter explores the theoretical grounds of conflict in project management. It explores the nature of temporary systems versus permanent systems and the relationship of projects to temporary systems. The concept of "project" is described and defined. Project management, its relationship to management, development in the United States and growth in the field of education are elaborated.
The purpose of the study related to conflict in project management is identified and explained.

Current understanding of conflict resolution within and between individuals, groups, organizations, and nations is reviewed, primarily focusing on organizational conflict. Further descriptions of conflict issues, interactions and resolution modes in project management are presented. The differences between public and private sectors of society are discussed.

A problem statement resulting from perspectives of projects, project management, conflict, project management conflict, and public and private sector differences is elaborated. The chapter closes with the research questions to be examined and the assumptions and limitations related to the study.

The Nature of the Projects

Permanent and Temporary Structures

As one examines life from the organizational perspective, there is a tendency to think of society's more permanent structures: business and industrial corporations, schools, universities, churches, fraternal groups, government agencies, and armed services. Within any society constituted of these interconnected organizations and groups, there are also a large number of transitory
structures operating between and within the more permanent organizations. Miles (1964) describes seventeen different types of temporary structures. Examples are conventions or meetings, games, juries, love affairs, ad hoc committees or task forces, personnel assessment programs, carnivals, utopias, sessions of lawmaking and justice-dispensing bodies, demonstrations, military battles, psychotherapeutic systems, consulting systems, total institutions, "pathway" organizations, classes at schools and universities, and research projects.

From the onset, members of temporary structures or systems hold to the basic assumption that at some point in time the structure will cease to exist. This terminating point may be identified explicitly and chronologically. It may be linked to the occurrence of a specific event or may be made contingent on the achievement of a general state of affairs.

Temporary systems are so pervasive in our society that they must perform certain necessary functions. Miles (1964) suggests that these functions are the compensation and maintenance of individuals or organizations, the accomplishment of short-term tasks, and the induction of change through education, reeducation and treatment.

A temporary structure directed toward short term task accomplishment provides an arena for achieving particular tasks more expeditiously and productively than is possible
in the on-going operation of a permanent system. Members drawn from the permanent organization can more readily devote all of their energies single-mindedly toward achieving the mission.

From Miles' list, the temporary systems focusing on the achievement of particular tasks are the scientific expedition, the political campaign, the military battle, the ad hoc committee, the industrial task force, and the research project (1964). These particular temporary systems can also be characterized as "projects" or project-like efforts.

Changes in existing organizational structures are inevitable, but occur slowly. Toffler in his book *Future Shock* (1971) states that a new organizational system of temporary structures challenges and eventually will supplant bureaucracy. He calls this organizational system "ad hocracy" and suggests as a society we are moving toward ad hocracy and away from traditional organizational structures. Managers of elements of the ad hocracy structure coordinate and direct teams consisting of workers with varied skills toward desired objectives. Toffler devotes an entire chapter to the discussion of projects and temporary structures. In discussing such temporary systems, Bennis (1969) describes them as more flexible and functional than the traditional organizational structures in accomplishing specified objectives. Toffler and Bennis
suggest that projects or project-like efforts will become even more pervasive and important in the future.

**Project Characteristics**

The concept of project is both historic and recent. The construction of the Pyramids of Giza by the Egyptians, the building of the Parthenon by Pericles in Athens, the building of a causeway to capture the island city of Tyre by Alexander the Great of Macedonia, the construction of St. Peter's Cathedral in Rome, and the invasion of Normandy by Allied Forces during World War II are all illustrations of project-like efforts. These efforts or exertions of work were accomplished by a temporary organization specifically structured to achieve the mission. Existing for a relatively short time, the mission was achieved within a stipulated set of resources.

More current descriptions of projects can be found in the works of Gaddis (1959), Norden (1960), Baumgartner (1963), Woodgate (1967), Cleland and King (1968), Cook (1971), and Ball (1974). In a recent study of literature related to the management of projects, Webster (1978) defines project as:

A unique, technologically determined sequence of purposeful, usually non-repetitive activities; involving the coordination of multiple, heterogeneous human and non-human resources representing a significant proportion of the performing organization's capacity; operating on an interrelated set of items; accomplishment
of which will result in the achievement of a specified set of objectives for one or a few units of output and termination of that work effort; with primary managerial emphasis placed on timely accomplishment of the work effort as a whole (as compared to the managerial emphasis on other modes of work). (p. 13)

Summarizing their descriptions for the purpose of this study, a project can be characterized as a unique, once-through, goal-oriented effort of interrelated tasks conducted by a temporary organization or system, to meet stated performance specifications within schedule and budget constraints.

**Project Life Phases**

A project, created to achieve an objective exists for a finite time period and ceases to exist when the objective is achieved or is terminated for some other reason before it reaches its objective. In general, researchers (Karger and Murdick, 1963; Cook and Cummings, 1973; Adams and Wilemon, 1975; Thamhain and Wilemon, 1975a; Eschmann and Lee, 1977; Adams and Barndt, 1978; and others) agree that the life span of a project is divided into four periods or phases. Each of the phases can be described as follows:

**Planning Phase** -- The planning phase in the life of a project involves setting and clarifying the goals and objectives of the project, defining and evaluating
alternative courses of action, and selecting the course which would most effectively and efficiently achieve the established objectives. The management work that has to be done is specifying finite tasks and sequencing the work task into a flow, establishing the time schedule, estimating material and manpower needs, and preparing a budget. During this phase, a written document, proposal or outline for future project activities is created.

Preparation Phase --- The preparation phase involves the initiation or start-up activities. These include hiring, training, and organizing the staff; obtaining, organizing, and negotiating for materials, facilities, and nonstaff services, and developing a project information system. This phase involves organizing these elements into a unified whole so that actual operations can begin on the proposed start-up date.

Operation Phase --- The operation phase involves the actual conduct of activities or work specified in the project plan developed during the planning phase. Activities include monitoring and controlling the activities to detect deviations from the project plan, determining the problem causing the deviation, and proposing and considering alternative solutions, making decisions, and implementing those decisions in order to ensure the achievement of the project goals.
Termination Phase -- The termination phase involves activities dealing with the ending of the project at or near the scheduled completion date. Some of the activities to be conducted are transferring personnel and equipment, storing records, developing a project history, and completing a final report.

To successfully achieve project objectives, the activities identified earlier under each life cycle phase must be performed. Many of the activities fall within the domain of project management.

Concept of Project Management

To better understand the contemporary concept of "project management," it is necessary to review the concept of management.

Management

Management is the accomplishment of desired goals by allocating resources and guiding the efforts of people. Fayol (1949) originally identified five functions of management. Several authors have since described and refined these functions (Le Breton and Henning, 1961; Newman and Summer, 1961; Haynes and Massie, 1961; Cook, 1966; Koontz and O'Donnell, 1972; and Ball, 1974). In the description that follows the functions of management are divided into planning, organizing, directing and controlling.
Planning -- Planning is defined as the process of initial decision-making related to the establishment of an enterprise's goals and objectives and the development of methodology, procedures and documentation to achieve them. The process involves the activities of establishing the goal, delineating its objectives, specifying the tasks to be performed, developing a task relationship, determining resource requirements, relating the requirements to time and cost, and developing schedule and budget documents.

Organizing -- Organizing is the process of establishing an effective structure of communication, authority, and responsibility relationships and positions, and staffing the positions to achieve the desired goals and objectives. It involves the activities of determining task-staff requirements, selecting, training, and orienting people, communicating expectations, assigning people to task and management work and delegating authority.

Directing -- Directing is the process of guiding, leading, and influencing organization members by relating to their values and satisfying their work needs and desires to achieve the desired goals and objectives. Activities related to directing include determining staff members' values and needs, clarifying work assignments, modifying work expectations, and motivating and leading staff members to perform their duties with zeal.
Controlling — Controlling is the continuing process of determining and correcting deviations between what actually occurs and what was planned. It involves the activities of measuring what is occurring, determining the difference from the plan, collecting and analyzing problem data, developing alternative corrective and adoptive actions, making decisions and implementing them.

Aspects and activities relegated to one function may best fit under another one of the functions of management. Attempts to make the functions mutually exclusive is not the aim. Taken as a group, they describe the functions of management.

In summation, management is the process of utilizing the four basic functions of planning, organizing, controlling and directing to achieve goals and objectives through the work of other people. In essence, management is the work one does to get things done through other people.

Project Management Characteristics

Management is usually identified with the operation of an ongoing permanent enterprise, program, or organization. Project management, however, is the process of applying the general functions of planning, organizing, controlling, and directing to the operation of a temporary effort or project. As stated before, projects differ
most from ongoing operations because they have a limited life span.

The creation, operation, and termination of a project necessitate the concentrated utilization of one or more of the four general management functions at different stages during the life span of the project. The planning function is utilized primarily during the project planning phase. Beginning activities of the controlling function and most activities of the organizing function are executed during the preparation phase. During the operation and termination phases, controlling and directing are utilized more than planning and organizing.

A traditional strength of the task orientation of project management has been its focus on bite-sized achievable objectives (Benningson, 1971). Because of the task orientation and the finite life span of projects, new techniques were developed to better manage projects. Network analysis techniques such as PERT (Program Evaluation and Review Techniques) developed for the Navy Fleet Ballistic Missile System by the Navy Special Project and CPM (Critical Path Method) developed by Sperry-Rand and Dupont were developed for project management in the late 50's (Cook, 1971). Other networking techniques have since been developed. They are not extensively found elsewhere in the field of management and are perhaps project management's most unique feature. The techniques were developed
for and directly associated with project management.

The definition of project management, therefore, is
the process of uniquely applying and utilizing aspects of
the general functions of planning, organizing, directing,
and controlling to the operation of projects over their
finite life spans.

Emergence of the Project Management Concept

Project management is definitely not a new concept.
St. Luke recorded some of the first evidence of thinking
on project management as he quoted Christ:

"What man among you if he wishes to build a
tower does not first sit down and estimate
the cost of it, to see whether he has enough
to complete it? Or else when he has laid
his foundation and cannot finish the building,
everyone who sees it will begin to ridicule
him and say, 'This man started to erect a
building, and he could not finish it!'"
(Luke 14:28-31)

During the last four decades, project management has
emerged as an essential management approach in business and
industry. Kast and Rosenzweig (1963) and Baumgartner (1963)
pointed out that in the United States, some of the first
examples of project management appeared in the military en-
vironment. In the 40's, the Manhattan Project of World War
II utilized project management to produce a specified type
of bomb within time and cost allowance. Other examples in-
clude the development of Polaris missile and nuclear
submarine (Cook, 1966) and the NASA Mercury, Gemini, and
Apollo projects (Baumgartner, 1963).

Kloman (1972) recognized that today's industrialized society has become increasingly more dependent on project management for task achievement.

There are numerous examples of project management in construction and other industries. Cummings and Cook (1973) pointed out that the 1970 Vega automobile was developed using project management techniques. This group worked with certain time and cost limitations to perform the specific task of developing a car model.

One can also find project management techniques utilized in the public sector. The Los Angeles Flood Control District, Los Angeles, California, employed a project plan to manage the construction of a large number of storm drains and other flood control devices and to achieve new administration goals (Tettemer, 1970). The Community Analysis Program in the City of Los Angeles applied project management techniques to fight urban blight (Scott and Joyce, 1970).

Emergence of Project Management in Education

In the last twenty-five years, the project concept emerged in the field of education through several programs and grants funded by the federal government, designed for the upgrading of existing educational practices.
In 1954, support for the improvement of instruction in science and mathematics in elementary and secondary schools utilizing the project format was initiated by the National Science Foundation. In 1954, Congress passed the Cooperative Research Act which was the first specific legislation related to education in support of educational research projects. Other pertinent legislation included the National Defense Act of 1958 and the Vocational Education Act of 1963.

These acts were soon overshadowed by the Elementary and Secondary Education Act (ESEA) of 1965 which, under separate titles, provided massive federal appropriations for public education to improve and strengthen educational quality and opportunities in elementary and secondary schools. Acceleration of innovative changes to improve educational processes at the local school level was the ultimate goal and plan in the federal government's financial stimulation of educational projects. In addition, the school systems adopted products of research and development activites conducted on local and state levels.

Title III of ESEA of 1965 was known as Projects to Advance Creativity in Education (PACE). The primary objectives were to create an awareness of new and greater quality services and programs, and to translate recently researched knowledge about teaching and learning into widespread educational practice in school programs.
Title III projects were representative of educational research and development projects because local school systems sought and secured funding competitively. Because of this type of legislation, the project format moved into the local school setting. For a more extensive discussion of the ESEA the reader is referred to Bailey and Mosher (1968).

Evidence of the emergence of project management in education is found in several sources. Cook (1966) studied PERT (Program Evaluation and Review Technique) and adapted it to educational projects. A more recent book, Educational Project Management (Cook, 1971), was designed to acquaint educators with problems of education project management and offer procedures and general suggestions for solving them.

To aid school districts develop and maintain a capability of project planning, operating and controlling, educational modules were developed at The Ohio State University funded and further refined by Research for Better Schools, Inc. (Cummings and Cook, 1973; Cook and Cummings, 1973).

Benningson and Nixon (1970) discussed how project management techniques and concepts apply to the life cycle of an ESEA Title III project within a city public school district. Hanna (1975) described how project management capability was developed in Bellevue,
Washington Public Schools and concluded that "Project management has been and will continue to be an important tool to be used by the Bellevue School District (p. 3)."

During the past twenty-five years, the onset of project management in the field of education has been augmented by Federal legislation and aided by knowledge of project management efforts in industry and government. This push for adaptation of a project management approach in schools has successfully achieved complex goals within cost, time and performance specifications. However, there has not been a systematic study of the field of project management (Butler, 1973; Webster, 1978).

**Conceptual Framework**

Bennigson (1971) in industry and Cook (1971, 1975) in education have developed conceptual frameworks for approaching the study of project management. Both have similar components; however, Cook's framework is more extensive. His framework is based on a systems model and illustrates projects inputs and outputs and the environment from which the inputs come and to which the outputs go. Cook's framework, shown in Figure 1, has three main divisions. The central area describes the "Project." The other two, surrounding the "Project," are the "Parent Organization" and the "External Environment."
Figure 1. Cook's Conceptual Framework for Study of Project Management

The environment immediately surrounding the "Project" is the "Parent Organization" which houses the "Project." Most projects operate within more permanent and ongoing structures or within programs made up of a number of projects. The "External Environment" encloses the "Parent Organization" and the "Project" and represents the greater environment related to the "Project." Both the Bennigson and Cook models place the project management system and the project manager at the center of project operation and communications.

Conflict in the Project Context

In guiding the operation of a project to the successful achievement of its objectives, the project manager often encounters conflicts and disagreements. Therefore, one of the requirements for successful project management is the ability to effectively manage the various conflicts and disagreements which invariably occur.

Several authors, such as Evan (1965a), Reeser (1969), Burke (1969), Schmuck and Runkel et al. (1972), and Deutsch (1973) point out that conflict in management is inevitable. The potential for conflict may increase because of the crossing lines of project authority within the organizational structure. (Cleland and King, 1968; Kast and Rosenzweig, 1974; and others.)
Walton and Dutton (1969) report that the nature of this inherent conflict is not necessarily functional or dysfunctional. In fact, purposeful and deliberate conflict must sometimes be used when the project manager interacts and negotiates with functional managers the details of the project and organization efforts (Cleland and King, 1968). Both functional and dysfunctional conflicts must come into play.

The ability of the project manager to convert dysfunctional conflict into functional conflict and to foster functional conflict can determine the degree to which project goals are successfully achieved.

Project directors need to know how to identify the elements and potential sources of conflict in order to effectively foster the functional elements of conflict and combat the dysfunctional elements of conflict (Blake and Mouton, 1964).

Once able to identify the elements, project directors could better manage the conflict to ensure productivity of project personnel and the success of the project. Knowing about the causes and intensities of existing conflict and preferred resolution methods, they would be able to better cope with conflict situations related to the major program parameters of performance, time, and cost (Wilemon and Cicero, 1970).
It would also enhance the decision-making process if the project directors were aware of potential sources of conflict, their nature and occurrence during the different stages of project's life-cycle (Thamhain and Wilemon, 1975a). If project directors understand when and where conflict occurs, they could plan and adjust for any detrimental defects before they could occur.

Project managers in business and industry and the human services field accomplish basically similar jobs, but do so in different environments. It is not known whether results from the research studies conducted in business and industry and subsequently in the military are applicable to project management in education. From environmental differences, one would expect that conflict intensities experienced and conflict resolution methods utilized to be quite different for business, education, and the military. However, the conceptualizing models developed by Cook (1971) in education and by Bennigson (1971) in business are highly similar, leading one to expect little difference between project managers in education and business.

The void caused by the absence of research studies on sources and intensities of conflict and conflict resolution methods in the management of projects in education needed to be filled. Further, there was a lack of studies
making comparisons and contrasts across environment contexts (Webster, 1978). Conflict in the Management of Education, Business and Military Property: A Comparative Study was designed to fill the gap in the literature.

The study concerns the measurement and comparison of intensity of different sources of conflict, level of intensity of the sources of conflict experienced during a project's life-cycle phases, and the conflict resolution methods preferred or rejected by project directors in education with those in business and the military. To aid in understanding this study, the nature of conflict is discussed.

The Nature of Conflict

General

Conflict exists when incompatible actions or activities are anticipated or actually occur. An activity is incompatible with a second activity when it interferes, obstructs, prevents, injures, or makes the second activity less likely or less effective. Incompatible activities may originate with a person, group, organization, or nation. If the incompatible activities involve only one person, group, organization, or nation, conflicts are called intrapersonal, intragroup, intraorganizational, and intranational. However, if it involves two or more
parties, the conflict is called interpersonal, intergroup, interorganizational, and international (Deutsch, 1973).

In a given state of affairs, one of two parties may experience and perceive conflict. The second party may experience and perceive actions differently. Therefore, interpersonal, intergroup, interorganizational, and international could exist entirely with only one of the parties (Deutsch, 1973).

The literature on conflict is varied and extensive. Several different typologies (theories) of conflict have been developed by Rapoport (1960), Pondy (1967), Deutsch (1973), and others. Boulding (1963) in Conflict and Defense, A General Theory, a typology of conflict as a general social phenomenon, attempted to map the field of conflict by presenting social conflict models involving individuals, groups, organizations, and nations. Boulding also points out that conflict exists between an individual and the organization, an individual and the group and the organization, and other cross level relationships.

Organizational Conflict

Organizational conflict is the type of conflict of primary interest to this study. Writers other than Boulding who have treated the concept of conflict as a general social phenomenon and have provided for the understanding of conflict within organization include Lewin (1948), Sherif and

Other writers have incorporated the concept of conflict at various levels of importance into general theories or typologies of management and organizational behavior and include March and Simon (1958), Thompson (1961), Chapple and Sayles (1961), Cyert and March (1963), Leavitt (1964), Caplow (1964), Crozier (1964), Bass (1965), Katz (1968), Bobbitt et al. (1974), and Kelly (1974).


In developing models of organizational conflict, Pondy (1967) has identified three of the most important, implicit orientations that run as a common thread through organizational conflict literature. First, a conflict relationship is made of interlocking sequence of conflict episodes. Each episode has a similar dynamic development pattern. The conflict relationship is dynamic and can be
characterized by stable patterns that occur across a sequence of episodes. Second, conflict may be dysfunctional as well as functional for the organization and the individual. It may have its roots either in the organizational context or within the individual. Third, conflict is a key variable in the feedback loops that characterize organizational behavior and is intimately tied with the stability of the organization.

In the literature, the term "conflict" has been used to describe antecedent conditions of conflictive behavior (i.e., competition for scarce resources, drives for autonomy, and divergence of subunit goals); the cognitive states of individuals (i.e., perception of awareness of conflictful situations and issues); affective states of the individuals involved (i.e., tension, anxiety, stress, hostility, and other emotions); and conflictful behavior of individuals to nations ranging from passive resistance to overt aggression (Pondy, 1967).

Pondy states that attempts to decide which of these aspects -- condition, attitude, cognitive state or behavior -- is really conflict, is likely to result in an empty controversy. The problem is not to choose among these alternative conceptual definitions, because each is a relevant stage in the development of a conflict episode (1967).
By combining the major orientations and the various conflict descriptions, Pondy developed a working definition and model of conflict. He proposed that conflict is a dynamic process made of a sequence of stages for each conflict episode. Each conflict episode consists of latent conflict, perceived conflict, felt conflict, manifest conflict, and conflict aftermath.

Building on Pondy's model and on the work of Coleman (1957), Aubert (1963), Fink (1968), Pondy (1969), Corwin (1969), Walton and Dutton (1969, Schmidt (1973), and Filley (1975) a slightly different model was developed. The six stages of process are shown in Figure 2. The stages are discussed in Chapter IV.

The lines and arrows in Figure 2 indicate the primary flow of the usual conflict episode. The dynamic process of a conflict episode can be roughly analogous to the dynamic process of decision making.

**Education Conflict**

Literature and research related to organizational conflict in the educational field is limited. Corwin (1965, 1968, 1969, 1970) has done studies related to staff conflict. Getzel condenses many of his and other studies, mostly at the University of Chicago, in *Educational Administration as a Social Process: Theory, Research, Practice* (Getzels et al., 1968). The studies
Figure 2. The Conflict Episode.
are related to his model which includes conflict as a major aspect.

Other contributors to the field from the developmental aspect include Schmuck and Runkel et al. (1972), Derr (1972), Bailey (1971), Melacon (1973), Schofield (1975), and Townsend (1973). Literature concerning school-community, desegregation, student activism, role and classroom conflict is not usually found outside the field of education.

Conflict in Project Management


The key study of measurement of conflict in the project management environment was conducted by Thamhain and Wilemon (1974, 1975a, 1975b, 1975c, 1975d). They include functional and dysfunctional aspects of conflict in the
definitions used in their studies. They state:

Conflict is defined as the behavior of an individual, a group, or an organization which impedes or restricts (at least temporarily) another party from attaining its desired goals. Although conflict may impede the attainment of one's goals, the consequences may be beneficial if they produce new information which, in turn, enhances the decision-making process. By contrast, conflict becomes dysfunctional if it results in poor project decision-making, lengthy delays over issues which do not importantly affect the outcome of the projects, or a disintegration of the team's efforts. (p. 31).

Thamhain and Wilemon (1975a) developed a set of seven potential sources of conflict frequently thought to be the prime causes of conflict in project management. The researchers summarized the potential conflict sources and they are exhibited in Table 1.

In their study, Thamhain and Wilemon reported a measure of intensity for each of the seven potential conflict determinants during each of the four stages of the project life cycle. The researchers requested the participation of 150 managers from various technology-oriented companies. Eventually, they selected a usable sample of 100 project directors. Using a questionnaire as the main data collection instrument, they measured: 1) the average intensity of seven potential conflict determinants over the entire project life cycle; 2) the intensity of each of seven conflict sources in the four project life cycle phases; and 3) the percentage of project managers preferring
TABLE 1

Seven Potential Sources of Conflict in Project Management

Conflict over Project Priorities. The views of project participants often differ over the sequence of activities and tasks which should be undertaken to achieve successful project completion. Conflict priorities may occur not only between the project team and other support groups, but also within the project team.

Conflict over Administrative Procedures. A number of managerial and administrative-oriented conflicts may develop over how the project will be managed; i.e., the definition of the project manager's reporting relationships, definition of responsibilities, interface relationships, project scope, operational requirements, plan of execution, negotiated work agreements with other groups, and procedures for administrative support.


Conflict over Manpower Resources. Conflicts may arise around the staffing of the project team with personnel from other functional and staff support areas of from the desire to use other departments' personnel for project support even though the personnel remain under the authority of their functional or staff superiors.

Conflicts over Cost. Frequently, conflict may develop over cost estimates from support areas regarding various project work breakdown packages; i.e., the funds allocated by a project manager to a functional support group might be perceived as insufficient for the support requested.

Conflict over Schedules. Disagreements may develop around timing, sequencing, and scheduling of project related tasks.

Personality Conflict. Disagreements may tend to center on interpersonal differences rather than on "technical" issues. Conflicts often are "ego-centered."

and rejecting conflict resolution modes (Thamhain and Wilemon, 1975a, p. 32). The participants were asked to rank the "intensity of conflict they experienced for each of the seven potential sources of conflict within each of the four life cycle stages" (p. 33). The researchers identified the four commonly accepted project cycle stages as project formation, project build-up, main program phase, and phase-out.

The relative intensity of each of the seven conflict sources was averaged over five interfacing groups. These are listed in Table 2 (Thamhain and Wilemon 1975d).

The study also examined the project manager's approach to conflict resolution. Five conflict resolution methods were first delineated by Blake and Mouton (1964), described by Thamhain and Wilemon (1975a) and presented in Table 3.

To obtain the information on the utilization of the five conflict resolution modes, the researchers developed an instrument patterned after the work of Lawrence and Lorsch (1967, 1969). Thamhain and Wilemon (1975a) described this section of their research as follows: "Aphorisms or statements of folk wisdom were used as surrogates for each of the conflict resolution modes" (p. 34). Lawrence and Lorsch (1967) separated the aphorisms according to the corresponding conflict resolution modes as shown in Table 4. Fifteen aphorisms were selected to match the five
TABLE 2

Five Interfacing Parties to Potential Conflict

<table>
<thead>
<tr>
<th>Subordinates.</th>
<th>Personnel that are directly hired or assigned to the project and working under the supervision of the project manager.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned Project Personnel.</td>
<td>Personnel from the functional departments who are temporarily assigned to the project on a &quot;loaned&quot; basis.</td>
</tr>
<tr>
<td>Functional Support Departments.</td>
<td>In an organization these are the specialized departments from which the project manager must obtain support for his project, i.e., the accounting or business office.</td>
</tr>
<tr>
<td>Superior.</td>
<td>This refers to the person to whom the project manager is immediately responsible.</td>
</tr>
<tr>
<td>Team Members.</td>
<td>This refers to the immediate team members assigned to the project. Sometimes conflict may arise among the team members themselves and the project manager may have to step in and resolve the differences.</td>
</tr>
</tbody>
</table>
TABLE 3
Five Conflict Handling and Resolving Modes

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal</td>
<td>Retreating from an actual or potential disagreement.</td>
</tr>
<tr>
<td>Smoothing</td>
<td>Deemphasizing or avoiding areas of differences; emphasizing areas of agreement.</td>
</tr>
<tr>
<td>Compromising</td>
<td>Bargaining and searching for solutions which bring some degree of satisfaction to the parties in dispute. Characterized by a &quot;give-and-take&quot; attitude.</td>
</tr>
<tr>
<td>Forcing</td>
<td>Exerting one's viewpoint at the potential expense of another. Often characterized by competitiveness and a win/lose situation.</td>
</tr>
<tr>
<td>Confrontation</td>
<td>Facing the conflict directly which involves a problem solving and consensus approach whereby affected parties work through disagreements.</td>
</tr>
</tbody>
</table>

TABLE 4
Aphorisms Describing Five Modes of Conflict Resolution

<table>
<thead>
<tr>
<th>RESOLUTION MODE</th>
<th>APHORISM</th>
</tr>
</thead>
</table>
| Confrontation   | 1. Come now and let us reason together.  
2. By digging and digging the truth is discovered.  
3. A man who will not flee will make his foe flee. |
| Compromise      | 1. Better half a loaf than no bread.  
2. You scratch my back, I'll scratch yours.  
3. It is easier to refrain than to retreat from a quarrel. |
| Smoothing       | 1. Kill your enemies with kindness.  
2. Soft words win hard hearts.  
3. When one hits you with a stone, hit him with a piece of cotton. |
| Forcing         | 1. Might overcomes right.  
2. The arguments of the strongest always have the most weight.  
3. If you cannot make a man think as you do, make him do as you think. |
| Withdrawal      | 1. He who runs away lives to run another day.  
2. Don't stir up a hornet nest.  
3. When two quarrel he who keeps silence first is the most praiseworthy. |

methods utilized in dealing with various project situations and interfaces. The project managers of the Thamhain and Wilemon study were asked to rank each proverb in terms of how accurately it reflected the actual way in which they handled disagreements in the project environment. The results of the study were reported in percentage of project managers rejecting or favoring the particular conflict-resolution mode.

Project Management Interaction Model

A model was developed to aid in visualizing the interfaces between persons and groups in the project environment identified by Thamhain and Wilemon and others. The model is an extension of Cook's (1971, 1975) conceptual framework.

Following Cook's framework, a project is generalized as an open temporary system. It is dynamic and receives information, material and resource input from the environment, then processes and transforms them, leading to desired outputs.

In the operation of the project, its members interact with each other and with members of the environment. The model identifies these possible groups. Since the Project Managers are the primary persons involved in guiding the operation of the project, most communication is directed to and through them from interfacing groups.
The model in Figure 3 identifies the interfaces existing between:

1) Project staff members.
2) The project manager and the staff members (subordinates).
3) The project manager and staff assigned from a functional department.
4) The project manager and the project manager's superior.
5) The project manager and another functional department.
6) The project manager and the funding agency (customer, client).
7) The project manager and members of the constituency (market, community).
8) The project manager and an external supplier of goods and services (merchant, consultant, fabricator, manufacturer, contractor or others).

Interactions between different people and groups identifies the possible parties to potential differences and conflict.

**Statement of the Problem**

In a project management environment, factors related to conflict can affect the productivity of the project personnel and the success of the project. A review of literature revealed a number of articles relating to the existence of conflict in project management. However, there were only three research teams that have actually
Figure 3. Model of Primary Interacting Relationships of a Project and its Environment.
attempted to measure the causes and intensities of conflict and the resolution methods utilized in the management of projects (Evan, 1965a, 1965b; Thamhain and Wilemon, 1974, 1975a, 1975b, 1975c, 1975d; Eschmann and Lee, 1977). Their studies are described in more detail in Chapter II.

The population sampled for the research done has been from the business/industry and military domains. There were no studies found which sampled educational projects specifically.

Educational projects fall within the public human services domain and differences among the private, business/industry, the public military and the public human services domains are pronounced.

Environmental Differences

Hasenfeld and English (1974) define human service organizations as those whose "primary function is to define or alter the person's behavior, attributes, and social status in order to maintain or enhance his well-being (p. 1)." On the other hand, one of the main objectives of the private business/industry organizations is to produce a profit. Hasenfeld and English contend that human service organizations have a unique set of characteristics and problems which distinguish them from other types of formal organizations. The following describes these characteristics:
1. The raw materials of human service organizations are human beings.

2. Goal definitions in human service organizations are problematical and ambiguous.

3. The technology of human service organizations is indeterminate.

4. Staff-client relations are the core activities in human service organizations.

5. Human service organizations increasingly rely on professional staff.

6. Human service organizations lack reliable and valid measures of effectiveness.

In addition to the above characteristics, there are some environmental differences specific to the educational system:

1) The educational system is a nine month operation, in contrast to most other organizations which operate during the entire year.

2) The professional staff deals with indirect clients (i.e., parents). This group can intrude on the authority of the professional staff. (Bidwell, 1974)

3) The educational system has direct ties with many elements of society. Changes in the school system can affect other social systems. In turn, changes in the other social systems can affect the educational system making the introduction of changes more complicated than in other organizations. (Oettinger and Marks, 1974)

4) The school system is local and receives "advice" from all sides. Nearly everyone has had experience with and is an
output of the educational system. Therefore, nearly everyone has his own opinion concerning the system.

A further discussion of the differences among the business, military, and education contents follows in Chapter IV.

Purpose

Because there were (1) no studies of conflict in the management of projects in education, (2) environmental differences among the military, business and education environments and (3) few studies making comparisons and contrasts across different environmental contexts (Webster, 1978) this study was undertaken.

The initial intent was to replicate in the education context as closely as possible the Thamhain and Wilemon study described in "Conflict Management in Project Life Cycles" (1975a). The data was to be collected and analyzed and the findings compared to the findings of the Thamhain and Wilemon study.

It was discovered subsequently that a similar study had been conducted in the military context (Eschmann and Lee, 1977). Data for this study in education and the military study were being collected at the same time. Consequently the aim of this study changed to the extent that it was decided to compare results across three contexts. This study continued to follow closely the
basic design utilized in the business context (Thamhain and Wilemon, 1975a) because its replication would be the least altered.

The specific objective of the study was to measure and then to compare intensities of seven sources of conflict, measures of intensity of the seven sources of conflict experienced during the four project life cycle phases, and the conflict resolution methods preferred or rejected by project directors in education with those in business and the military.

Research Questions

Three research questions guided the study:

Research Question I: Do project managers in education, business, and the military encounter different amounts of intensities of conflict for seven potential sources of conflict over entire project life cycles and do the rank orders of the seven conflict intensities differ for the three environmental contexts?

Research Question II: Do the rank orders of the measures of the intensity of conflict for seven potential sources of conflict during each of the four life cycle phases of a project differ for project managers in education, business, and the military?

Research Question III: Are the rank orders of the percent of project managers preferring or rejecting
particular conflict resolution methods in education, business, and the military similar?

Assumptions

Several assumptions were made:

1. It is assumed that ESEA Title II projects are representative of federal and state funded educational projects.

2. The data collected were based on project managers' perceptions. It was assumed that the data to be gathered and the information obtained from them is representative of the true relationships that existed.

3. It was assumed that the questionnaire was completed by one person -- the project manager -- and that he answered each question honestly.

4. It was assumed that the Thamhain and Wilemon (1974, 1975a, 1975b, 1975c, 1975d) and the Eschmann and Lee (1977) studies were accomplished in a professional manner and that the reported results were an accurate reflection of the data they obtained.

5. It was assumed that the definitions and assumptions from supportive research studies were valid and reasonable.
Limitations

1. The study is limited to the local school district project managers (primarily ESEA Title III project managers) as described in Chapter III.

2. The results of this study may be formally generalized only to Title III projects in operation during 1975.

3. The validity of the comparison of the data collected in this study to that of Thamhain and Wilemon and Eschmann and Lee is limited by the validity of the data furnished and the results reported.

4. This study was a replication of the Thamhain and Wilemon (1975a) study and is limited by the Thamhain and Wilemon study elements, such as design, definitions, instrumentation, data collection methods, and analysis procedures.
CHAPTER II
REVIEW OF RELATED RESEARCH

Introduction
This chapter discusses several surveys of literature pertaining to project management. It reviews research concerned with the human management skills of project managers and studies of projects in the educational context. A discussion of studies of three research groups examining sources, interfaces, resolution methods, and intensity of conflict in project management is presented. The chapter closes with a summary of results of studies discussed.

State of Art Studies of Conflict
Surveys of literature pertaining to project management reveal that there are few studies in measurement of conflict. In 1978, Webster in The Management of Projects --An Examination of the State of the Art as Presented by Current Literature, his dissertation, made an extensive study to determine the state-of-the art of literature on project management. He found that there are certain areas which have been thoroughly researched and other areas which have received little attention. Concerning conflict management, Webster stated "The recent literature on conflict
management and authority represents the interest of only three collaborating researchers." (p. 397)

The literature research for the current study also found that three studies were the only ones concerning conflict sources, interfaces, intensities, and resolution methods. (Evan, 1965a, 1965b; Thamhain and Wilemon, 1975a, 1975b, 1975c, 1975d; Eschmann and Lee, 1977). A discussion of these three studies is found later in this chapter.

In an earlier review, A Summary of the Major Research Findings Regarding the Human Element in Project Management, published in 1977, Baker and Wilemon reviewed research relevant to understanding the effect of the human element in project management. Concerning the area of conflict management, they cited Wilemon (1971) and Thamhain and Wilemon (1975a).

In 1973, a report of a research of the literature by Butler in Project Management: A Study in Organizational Conflict identified no research actually measuring conflict in the project management context. Butler based his suggestions and propositions concerning project management on research and theory from other management areas.

In the military environment, Adams and Barndt (1978) made an analysis of four separate research studies dealing with project management: Lempke and Mann (1976), Haddox and Long (1976), Barndt, Larsen and Ruppert (1977),
Eschmann and Lee (1977). The analysis illustrated the differences in behavioral and structural characteristics of the four phases of a defense program life cycle. The Eschmann and Lee study discussed later in this chapter was the only one included in the review that contributed to the understanding of conflict in managing defense programs.

**Human Management Skills of Project Managers**

Numerous studies concerning the utilization of the human relations and human management skills in project management have been reported in the literature. Although the several studies are not directly associated with conflict in project management, they are pertinent to this study because they demonstrate that human relations and management skills affect the successful operation of projects and the achievement of project objectives.

Davis (1962) conducted a survey of manufacturing firms in the West and observed their departmental project managers. The project manager's need for adequate human skills was evident because the findings of this study indicated that project managers spend 69% of their time in face-to-face communication. He found that project managers need to adjust technical solutions with resource, cost, time, and human factors. Davis concluded that the project manager should not be a technical specialist
only but must have the ability to integrate all of the elements of the project.

In the human services area, Andrew's (1967) study of management problems of four projects in applied social research indicated that conflict between levels of organizational hierarchy was listed as a type of stress present in every project studied.

In 1967, Rubin and Seelig reported that a project manager's technical performance was related negatively to project success or performance. The results of this study seem to be opposite from what one might expect with respect to technical skills. However, experience and type of project were intervening variables.

The project environment is a factor for the necessity of human skills of the project manager. Project managers work in an environment which requires much adaptability and therefore, must have a high tolerance for uncertainty (Cicero, 1969). Reeser (1969) examined project management in four aerospace firms by interviews to determine whether or not the project type of organization can inherently cause human problems. He found that the study projects were more frustrated by "make-work" assignments, ambiguity, conflict in the environment, and multiple levels of management. Project personnel also expressed feelings of less loyalty to their parent organizations.
The importance of integrating all variables of the project situation is considered instrumental for a successful project. Bennigson and Nixon (1970) reported that project managers were most successful using a systems approach to management. This involved consideration of the work to be done, team members, and environment. Project managers needed to make these elements interact to best accomplish the task. Kloman (1972) contrasted managerial elements of the NASA Surveyor and Lunar Orbiter projects. His study of 100 percent managers from both programs indicated that the project managers considered the following to be the major variables of project management: environment, role of individuals, team work, definition of roles, maintaining original objectives, organization system capacity, management systems, role of headquarters, incentive contracting, cost performance, and science/engineering relations. The role of the project manager was considered vital for handling these variables.

The project managers felt that their most crucial area of competence was in human skills and that developing good team work was most important for the completion of a successful project. The ability to have a complete project overview and the ability to delegate responsibility to the appropriate team members were considered important skills. Kloman's study of projects exhibited the critical
nature of interpersonal relations, human skills, and compatibility between individual managers, and teamwork. Kloman felt that many of the project difficulties stemmed from individual and institutional discords that hindered communication and agreement based on mutual interest resolving project problems.

The project manager's abilities as a leader were considered important for the success of the project. The effective project managers foster involvement among project personnel by setting an example. Gemmill and Thamhain's (1972) study of 22 project managers and 64 project personnel reported that effective project managers were able to establish support and mediate disagreement.

The human skills of the project manager are extremely important to the successful project. Baker, Fisher and Murphy (1973) surveyed 646 project managers and developed an a posteriori model of the relationships among situational, structural, and processive variables related to a measure of project success. The factors affecting the success of projects fell into three categories: human skills, project management skills, and expertise in the field. Human skills frequently correlated positively with project success. Among those factors which strongly affected success (having a correlation greater than 0.30) were adequacy of project team sense of mission, adequacy of project team goal commitment, unity and cooperation
between project manager and contributing department managers, unity and cooperation between project manager and client contact, unity and cooperation between project manager and public officials, and difficulty coordinating with client organization.

The influence of human skills was also apparent among those factors which did not have such a strong relationship but tended to affect success (having a correlation between 0.20 and 0.30). These skills included: difficulty-rapport with client organization, project team participation in major problem solving, difficulty-rapport with parent organization, project team participation in decision making, unity-project manager and his superior, adequacy of project manager in human skills, difficulty coordinating among team members, and difficulty keeping competent team members.

In Chapman's (1973) study of the National Aeronautics and Space Administration (NASA) project management system, the results indicated that of the four principle program management skills (human, managerial, conceptual, and technical), human skills were rank highest in relative importance. Chapman states:

The project manager placed greatest importance on human skills such as the ability to coordinate group effort and mediate differences, and the ability to work with others by generating enthusiasm.
and winning their respect. (p.94)

In summary, the studies relating to the utilization of human relations and human management skills in project management indicated that the manager's ability in human relations is an important factor for the success of the project. Few studies, however, have been conducted that could identify the human management skills necessary to overcome friction among project members and disharmony between interfacing groups.

Human Relations in Education Projects

Review of the literature revealed several studies concerning the human factor in education projects. There were no studies in the field of education concerned with the measurements of conflict in the project environment. Although the several studies are not directly related to conflict in project management, they are pertinent to this study because they demonstrate a concern with the human element in the management of projects in education.

In a qualitative research paper, Mooney (1957) described a problem of the researcher's inner feelings in the field of education. He described the personal conflict which occurs when the researcher-project manager tries to eliminate all personal feelings and values from his research method.
From personal experience as a consultant in an educational project to develop a program for educationally deprived children, Mooney (1966) related several problems encountered during the project initiation phase in a qualitative research paper. A project is initiated in the middle of ongoing operations of the organization; thus there are feelings of intrusion and disruption. Since the direction of the project is toward new and better ways of completing old tasks, the project could be considered a type of competition and thus, a threat to the old ways. There are also the problems of "ownership" of the project, personnel and staff limitation in the sense that the project activities usually cannot be offered district wide, and the nature of the product of the project, a new method of teaching. Many of the problems identified by Mooney have a potential conflict nature. Mooney offered a set of suggestions to aid in project implementation. Some of the suggestions were related to reducing and eliminating the conditions that may cause conflicts.

In 1973, the RAND Corporation conducted a study of federally funded projects designed to encourage innovative practices in the public school system. Subsequently, five reports were written concerning this study. Survey responses of 293 of these programs indicated that managerial strategies affect the project beyond its initial stage. Variation in types of projects did not totally explain
variation in project success or in planned continuation of
the project (Berman and Pauly, 1975). Interviews of 29 of
the 293 surveyed programs demonstrated that the need for the
project was more effective than fiscal motivation. Intangi­
ble motivation (professionalism) was more effective than
tangible motivation (salary). The most dominant factor in
project outcome was the initial commitment of the local
education agency (Greenwood, Mann, and McLaughlin, 1975).

The relationships between performance ratings and
personal needs of educational projects directors were
studied by Wagner (1974). From an analysis of his mail
survey of 200 ESEA Title III project directors, Wagner
attempted to indicate that there was a positive relation­
ship between the fulfillment of self-realization needs
and project manager effectiveness and a negative relation­
ship between nonfulfillment of those needs and project
manager effectiveness. However, the research could not
justify the research hypothesis.

The criteria used for determining the success of an
educational project was studied by Ball (1974). Analysis
of his mail survey of 196 projects, sponsored by the
Regional Research Program of the National Center for Edu­
cational Research and Development, U. S. Office of Education,
indicated that the project principal investigators, parent
organization representatives, and government monitors agree
that the rank order for criteria for project success is:
1. Quality
2. Client Satisfaction
3. Spin-off Benefits
4. Follow-up Work
5. Cost

There was no difference between the large and small organizations.

A survey of 37 ESEA Title III project directors in Washington and Oregon by Hanna (1975) examined their attitudes and intensities of attitudes related to the project leader's position. Respondents rated role statements concerning project management activities that included human factor concerns as to preferences and non-preferences. Favorable attitudes for all of the role statements were found.

Tso (1976) investigated the management techniques and human skills possessed and utilized by project directors related to Cook's conceptual framework (1975). Analysis of the mail survey of 320 Title III project directors indicated that Cook's framework was consistent with field reality.

These studies concerned with the human factor in the project environment in education indicate that the human factor is an important element in the successful operation of projects and the achievement of project goals.
Conflict in the Management of Projects

A search of the literature reveals only three studies that attempted to measure conflict encountered in the project management setting. The major research studies in this area were done by Evan (1965a, 1965b), Thamhain and Wilemon (1974, 1975a, 1975b, 1975c, 1975d), and Eschmann and Lee (1977). Summaries of these studies follow below.

Evan

The basic purpose of Evan's (1965a, 1965b) study was to examine some causes and consequences of several types of conflict in two research and development organizations: one in industry and one in government.

The basic assumption of the study was that conflict does, indeed, occur in organizations because of a lack of agreement as to the expectations and prescriptions for organizational positions or because of a lack of consistent commitment to organizational goals. Not all types of conflict were considered detrimental. Some were considered beneficial for achieving individual and project goals. Thus, Evan assumed that the practice of attempting to minimize conflict may not be wise in some project environments (especially knowledge and technology-producing projects). Evan theorized that the trend toward the
teamwork approach of project completion has spawned a variety of areas in which conflict can occur. With these assumptions in mind, he attempted to determine what kinds of conflict were detrimental to or enhanced the success of projects in research and development.

The hypothesis of this study was that conflict concerning the goals of the projects and the methods used to achieve them (technical conflict) was beneficial for project performance. On the other hand, interpersonal conflict would be detrimental to project performance. Evan stated that:

Controversy in project teamwork, or technical conflict in our terminology, can potentially be adjudicated by rational means and generate new perspectives on the problems at issue. Interpersonal conflict, because it does not lend itself as readily to rational management, may prove disruptive and may interfere with the performance of the project group. (1965b, p. 39).

To test this hypothesis, Evan used a questionnaire survey of three groups (project members, first level supervisors, and second level supervisors) employed in two research and development organizations, one in government and the other in industry. The questionnaire explored kinds of conflict, hypothetical sources of conflict, and several measures of performance. He measured several types of conflict, both interpersonal and administrative, involving peer-peer and supervisor-subordinate relationships.
An analysis of the data confirmed the original hypothesis that interpersonal conflict is negatively associated with performance and that technical conflict is positively associated with performance. The relationship between conflict and performance seemed to be affected by two variables: group loyalty and group size. For the industrial projects, technical conflict had a more positive effect on performance in smaller groups but in larger groups where there is apt to be more interpersonal conflict, technical conflict had a negative effect on performance. Technical conflict between peers seemed to have beneficial results in achieving project goals (especially in government projects).

Analysis of superior-subordinate conflict revealed that there was a positive association between the incidence of reported conflict and position in the organization. Evan related two possible interpretations of this finding: either more superior-subordinate conflicts are experienced with higher status or, there is a reluctance to admit having experienced such conflict because of the increment of authority that accompanies higher status in the organization.

Evan's results indicate that there was little interpersonal conflict in superior-subordinate relationships. Most of the reported conflict was technical or administrative. He attributes this to the generation of
interpersonal conflicts by technical and administrative conflicts and to the difficulty of describing and re-solving interpersonal conflict.

Thamhain and Wilemon

Thamhain and Wilemon (1974, 1975a, 1975b, 1975c, 1975d) studied the intensity of potential sources of conflict in projects. Their study examined the mean intensity of seven potential conflict determinants often thought to be main causes of conflict in project management. The intensity of each conflict determinant was distributed over the individual project life cycle stages. An examination was then made of the various conflict-handling modes used by project managers. The study led to a number of suggestions for decreasing the detrimental effects of conflicts over the project life cycle.

Thamhain and Wilemon felt that the values of their research was to facilitate effective project management by determining the major conflicts in the various projects life cycles; thus, there would be a greater chance that project managers could minimize the adverse effects of the potential conflict sources.

The study was based on a questionnaire survey of 150 project managers from various project environments of which 100 responded.
Both the questionnaire and the interviews were designed to measure values on the following three variables:

1. the average intensity of seven potential conflict determinants over the entire project life cycle;

2. the intensity of each of the seven conflict sources in the four project life cycle phases;

3. the conflict resolution modes used by project managers (1975a, p.32).

Project managers ranked seven factors which are often thought to cause conflict. These conflict issues included: project priorities, administrative procedures, technical opinions and performance trade-offs, manpower resources, cost, schedules, and personality problems; see Table 1 in Chapter 1. These conflict areas were evaluated in five interfacing groups: subordinates, assigned project personnel, functional support departments, superiors, and team members; see Table 2 in Chapter 1. The results are summarized in Figure 4.

Conflict over schedules was the major source of conflict. The most conflict occurred with functional support departments. Thamhain and Wilemon explained that this conflict occurs because project managers frequently don't have authority to determine the priorities of functional areas but do have the responsibility for maintaining their projects on schedule.
Figure 4. Mean Intensities of Conflict Sources with Interacting Parties of Business Projects.

The intensity of the potential sources of conflict was also determined for the four project life cycles (project formation, project build up, project phase and phase out) and the results are summarized in Figure 5. The trend of conflict intensities over the four project life cycle stages are illustrated in Figure 6. These graphs represented general trends. The authors also point out:

It is important to note that while a determinant of conflict may be ranked relatively low in specific life cycle stage, it can, nevertheless, cause severe problems. A project manager, for example, may have serious on-going problems with schedules throughout his project, but a single conflict over a technical issue can be equally detrimental and could jeopardize his performance to the same extent as schedule slippages. This point should be kept in mind in my discussion of project management conflict. Moreover, problems may develop which are virtually "conflict free" (i.e., technological anomalies or problems with suppliers) but may be just as troublesome to the project manager as any of the conflict issues discussed. (1975a, p.42)

For part of their study, Thamhain and Wilemon relied on the research of Blake and Mouton (1964) who identified five modes of conflict resolution used most often by managers. These included: withdrawal, smoothing, compromising, forcing and confrontation; see Table 3 in Chapter 1. To avoid bias which might have resulted from using these terms, the project managers were asked to rank fifteen proverbs. The proverbs, which were originally developed and tested by Lawrence and Lorsch (1967),
Figure 5. Measures of Relative Intensity of Conflict Sources over the Four Life Cycle Phases for Business Projects Based on Five Groups.

Figure 6. Trends of Conflict Intensity over the Four Project Life Cycle Stages of Business Projects.

represent the five types of conflict resolution; see Table 4 in Chapter 1. The scores indicated the relative strength of each of these types of conflict resolution, the results are summarized in Figure 7.

**Eschmann and Lee**

Eschmann and Lee (1977) replicated aspects of the Thamhain and Wilemon (1975a) study design. Their study sampled military rather than civilian project managers. They analyzed data from 136 questionnaires which had been completed by Air Force System Program Office (SPO) managers that were currently operating projects/programs. Thamhain and Wilemon collected data from project managers who had completed their projects.

Eschmann and Lee's first research hypothesis was:

There is no difference in the intensities of conflict experienced by Air Force Weapon System Program Offices (SPO) managers and civilian program/project managers for each program/project category. (p. 73).

The results of the study did not support this hypothesis; see Table 18 in Appendix J. In fact, the differences in intensities of conflict perceived by program managers and civilian project managers were quite evident. Relative intensities in each of the conflict sources were significantly higher in civilian projects. The results of this part of the study are shown graphically in Figures 8 through 10. Additional data is included in Appendix J.
## Conflict Resolution Profile

### The Most and Least Important Modes of Conflict Resolution

<table>
<thead>
<tr>
<th>% of Project Managers Whose Style Seems to Reject This Mode for Conflict Resolution</th>
<th>% of Project Managers Whose Style Seems to Favor This Mode for Conflict Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>70% 60% 50% 40% 30% 20% 10% 0</td>
<td>10% 20% 30% 40% 50% 60% 70%</td>
</tr>
</tbody>
</table>

- **Confrontation**
- **Compromise**
- **Smoothing**
- **Forcing**
- **Withdrawal**

Figure 7. Mode of Conflict Resolution Preferred and Rejected by Business Project Managers

Figure 8. Mean Intensities of Conflict Sources with Interacting Parties of Military and Business Projects.

Figure 9. Relative Intensity of Conflict Sources over the Four Life Cycle Phases for Military Project Based on Six Interfacing Parties.

<table>
<thead>
<tr>
<th>SOURCES OF CONFLICT</th>
<th>AIR FORCE CATEGORIES</th>
<th>CIVILIAN CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIORITIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TECHNICAL ISSUES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMINISTRATIVE PROCEDURES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANPOWER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCHEDULES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERSONALITY</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 10. Comparison of Rank Order Profiles of Conflict Source Intensities over the Four Life Cycle Phases in Military and Business Projects.

NOTE 1. Conflict Profiles are Based on the Rank Order. Largest height indicates highest rank in each Category.

The mean intensities of conflict for the seven sources of conflict with six interfacing parties perceived by military SPO managers and with five interfacing parties by business project managers are shown in graphical form in Figure 8. The intensities of conflict perceived by business project managers were greater than for military SPO managers.

The relative intensity of the seven sources of conflict and the average total conflict of the six interfacing parties to conflict over the four life cycle categories of military programs are shown in Figure 9. The rank orders over time, trends, of conflict source intensities over the four life cycle phases for military and business projects are compared in Figure 10. The patterns appear to be different from each other.

The second research hypothesis was:

There is no difference in the use of conflict resolution modes by SPO managers and civilian program/project managers.

(p. 100)

This hypothesis was supported by the study results. The data is illustrated in Figure 11. The one notable difference between military and civilian project managers was the consistently lower degree of acceptance and usage of every resolution made by SPO managers. Eschmann and Lee stated that it might be due to the more procedurized military nature of the System Program Office environment.
THE MOST AND LEAST IMPORTANT MODES OF CONFLICT RESOLUTION

% OF AF SPO MANAGERS AND CIVILIAN PROGRAM/PROJECT MANAGERS WHOSE STYLE SEEMS TO REJECT THIS MODE. % OF AF SPO MANAGERS AND CIVILIAN PROGRAM/PROJECT MANAGERS WHOSE STYLE SEEMS TO FAVOR THIS MODE.

CONFRONTATION

COMPROMISE

SMOOTHING

FORCING

WITHDRAWAL

AF SPO MANAGERS

CIVILIAN PROGRAM/PROJECT MANAGERS

Figure 14. Comparison of Air Force and Civilian Usage of Conflict Resolution Modes.

Figure 11. Modes of Conflict Resolution Preferred or Rejected by Military and Business Project Managers.

In addition, Eschmann and Lee suggested that the lower degree of conflict in military projects influenced the decreased usage of resolution modes.

The sample means of the intensities of each conflict source by interfacing groups were compared with the corresponding means from the Thamhain and Wilemon study. The results indicated that the relative intensity for each source of conflict by interfacing groups, derived from the military was significantly lower than the corresponding relative intensity derived from the Thamhain and Wilemon study. The means in numerical form for the military and business are shown in Table 19 in Appendix J.

Eschmann and Lee related the differences in the conflict intensities to the differences in military and civilian project environments. They stated that one primary difference in project environment was that the SPO managers spent more time with numerous interfacing but nonproject related agencies. On the other hand, civilian project managers spent less time with outside agencies, and more time with management of the project, team members and with communications within the project.

**Summary**

Project management plays an important part in completing complex tasks. The human management aspect is important to project operations. It is accepted that
conflict is inevitable in the project setting. However, very little research (and none in education) has been done examining and measuring the intensity or amount of conflict and methods preferred for resolving it.

The researchers mentioned in the previous section have examined the intensity of conflict of potential conflict sources with interfacing parties in project management. Evan reported that interpersonal conflict is detrimental to performance while technical was not.

Thamhain and Wilemon further examined conflict in business and industry and determined the intensity order of seven difference sources of conflict encountered by project managers over the total life cycle of their projects. Conflict over Schedules ranked highest with conflict over Project Priorities ranking second. The lowest ranking were conflict over Cost and Personality conflict.

Thamhain and Wilemon's measurement of timing of the different conflict sources in the four life cycle phases of project management did not vary drastically from the rank order of total life cycle conflict except during the termination phase.

Eschmann and Lee replicated aspects of the Thamhain and Wilemon study in the military program management environment and compared the findings between the two contexts. The data was reported for six interfacing groups rather than for the five reported for the Thamhain-Wilemon study.
Following is the rank order of overall conflict intensities:

1. Program Priorities
2. Technical
3. Administrative Procedures
4. Manpower Resources
5. Schedules
6. Costs
7. Personality.

For both studies conflict over Project Priorities ranked high and conflict over Costs and Personality conflict ranked low.

Eschmann and Lee's findings indicate that a large contribution to mean intensity of the conflict with interfacing groups occurred with outside agencies. The outside agency group was not included in the business study conducted by Thamhain and Wilemon.

Eschmann and Lee also made comparisons of the timing of conflict during the four life cycle phases between the two environments. Again, data from the six interfacing groups were used rather than from five. Ranking of measures of conflict intensity for the four phases were made and compared. Eschmann and Lee used Kendall's Tau to make the comparison. They found that the rankings were significantly different between the two contexts.

The same method was utilized in both the business and military studies to collect and analyze the data related to project manager preference of conflict resolution modes. The rank order of resolution methods preferred
project managers for both business and the military were identical. Confrontation was the most preferred. The following is rank order of the percent of project managers preferring the resolution modes.

1. Confrontation
2. Compromise
3. Smoothing
4. Forcing
5. Withdrawal

The business and military studies of conflict in management of projects were steps in a sequence to gain a clearer picture of the human factor in project management. If the studies were replicated in another environment it would add more depth and detail to the picture of understanding.

Although project management has become increasingly important in the educational field, similar research on conflict and conflict resolution had not been conducted. A replication and comparison study performed in the educational context would add research knowledge to both the human factor concern in project management and the educational project management streams of research. This current study was designed to provide additional understanding of conflict and conflict resolution methods in managing projects in education and other contexts.
CHAPTER III
METHODS AND PROCEDURES

Introduction

This chapter describes the general design and specific methods and procedures used to answer the three major questions of this study. The instrument development process, the population and sample, data collection procedures, and methods utilized to analyze the data are presented.

Basic Design

The basic design of this study was a replication, in the field of education, of the Thamhain and Wilemon study in the field of business. To answer the study's research questions, the results from the current study were to be compared with the results of the Thamhain and Wilemon (1975a) and the Eschmann and Lee (1977) studies.

Instrument Development

In order to achieve desired comparisons, instrumentation similar to that created by Thamhain and Wilemon was used to gather the data for this study. The original instrument was developed by Thamhain and Wilemon through
several pilot tests for their study of conflict in business and industry.

Contact by letter and phone was made with Dr. David Wilemon at Syracuse University and with Dr. Hans Thamhain at G. T. E. Sylvania, Inc., in Needham Heights, Massachusetts. Several copies of the Thamhain-Wilemon instrument were received along with recommendations concerning data collection and data analysis and permission to use their instrument for this study. A copy of the original instrument is included as Appendix B.

**Initial Form**

Five former and current Title III project directors in the central Ohio area were asked to complete the original Thamhain-Wilemon instrument. These project directors were to ascertain if the questionnaire was appropriate to collect data from other project directors in education and whether or not the instrument was clear and comprehensive. The several changes that they suggested plus the original instrument were reviewed by two faculty members and several graduate students involved with research and instrument development at The Ohio State University. This group also suggested changes to improve the instrument.
First Revision

A revised questionnaire was developed incorporating the suggestions. The revised questionnaire was reviewed by the original faculty members involved in the instrument development and a third faculty member involved in survey research technique. Suggestions were made to add questions, delete questions, change wording, restructure the order of the questions, add definitions, and redesign figures and scales.

Second Revision

A second revision was made with the aid of Dr. Desmond Cook. At this point, the instrument was divided into two sections. Section I questions were related to educational project management conditions. Question 1 of the Thamhain-Wilemon questionnaire involved a description of the project work environment and organizational structure became Question 2 of this version. The definition of "functional departments" was added. The titles within each organizational description were changed to better suit an educational project environment.

Question 2 of the Thamhain-Wilemon questionnaire concerning the division of the project task work became Question 1 of Section I and was expanded to include project directors' contribution to project tasks directly.
The Thamhain-Wilemon questionnaire items 3 and 9 dealing with the areas and duration of the responsibilities of the project directors, project description data, and personal data were also included in Section I. The forms of the questions were changed and separated increasing the number of questions. They still addressed the information collected by the questions in the original instrument.

Section II of the second version included items relating to sources of conflict and their resolution. Question 5 of the Thamhain-Wilemon questionnaire dealing with the intensity of the major causes of conflict in the project environment corresponded to Question 1 of this Section. Respondents were asked to mark a scale ranging from "little or no conflict" to "great conflict." The vertical axis of the grid represented sources of conflict and the horizontal axis of the grid represented the interfacing groups. A sixth interfacing group "Outside Funding Agency" was added to the question, thus changing the Thamhain-Wilemon original 35 position grid designated for five interfacing groups to a 42 position grid. The category "outside funding agency" was added to determine whether or not this party had significant conflict situations as this group continually interfaces with project managers. The Eschmann and Lee study in the military context also included the "outside funding agency" as an interfacing party to conflict. To use terminology more
familiar to educators, the wording of the sources of conflict dealing with "specifications" was changed to "technical, conceptual, and performance specifications."

Thamhain-Wilemon's Question 6 concerning the timing of conflict in the various project life phases became Question 2. The grid for this question was identical to that used by Thamhain-Wilemon with the deletion of the last column of boxes. The horizontal axis of the grid identified four life-cycle phases noted in Chapter I: 1) the project formation; 2) the early program phases (project build-up); 3) during the main program period; and 4) toward the end of the program. The vertical axis delineated the seven potential sources of conflict.

The Thamhain-Wilemon original Question 2 dealing with the fifteen proverbs characterizing the five conflict resolution methods became Question 5. The proverbs were used as unobtrusive measures to avoid the potential bias that could be introduced by the use of social science and educational jargon (Webb et al., 1966). The use of the proverbs is directly related to the research of Lawrence and Lorsch (1969), who developed 25 aphorisms to describe the five methods of resolution identified by Blake and Mouton (1964). Fifteen of these aphorisms were selected by Thamhain and Wilemon to match the five resolution methods described in Tables 3 and 4 in Chapter I.
Thamhain-Wilemon's original Question 4 concerning the perceived reason for compliance with orders and recommendations, Question 7 concerning systems of appeal, and Question 8 concerning perceived effect of opportunity to appeal conflict ruling were dropped because appeal systems are not yet extensively found in education.

On the revised form, Question 4 asking about percent of goals achieved and Question 6 dealing with project success as perceived by the project director were added to determine whether or not conflict intensity was related to project success. Question 4 was worded similarly to the dependent variable question from the RAND study of factors affecting the success of change agent projects in education (Berman and Pauly, 1975). Data on these variables was not used for this study but is available for subsequent analysis.

Immediately following Section I and preceding Section II, a set of terms used in the study was included in the instrument. The definitions were included to aid project directors in completing the instrument and hopefully to elicit more consistent knowledge of the terms. A copy of the final version of the Definition of Terms is included as Appendix D. Other terms not included with the instrument but defined for use in the study are also included in Appendix D.
The three faculty members and the graduate students examined and reviewed the instrument and made suggestions for improvement. Only minor changes to wording and layout were suggested. The suggestions were incorporated into the third and field test version.

Field Test Version

The data collection instrument was field tested with 16 project directors in Colorado, Kentucky, Georgia, Florida, Pennsylvania, Indiana, West Virginia and Ohio. The investigator interviewed each project director after the instrument was completed during the summer and early autumn of 1977.

Final Form

The final instrument was constructed, based upon the comments suggested by the project directors. Using their comments and opinions related to improving the instrument, the final instrument form was developed. Question 1 of Section II was enlarged to two pages. The definition sheet was dropped from the questionnaire and was included separately. The final form of the questionnaire is included as Appendix A.

The questionnaire was designed with space on the right side of each page for computer card column numbers and converted data. Efficiency in data conversion and key
punching was aided by this feature.

Response Rate Design Features

The study was designed to collect data by means of a mailed survey. Several steps were taken to aid in increasing the response rate. Results of the field test indicated that a printed data collection form would more likely elicit responses. The final version was printed to try to convey a higher level of interest and professionalism. The data collection form was printed on pink paper with black ink. It was thought that if left on a desk with other papers, which are usually white, a pink questionnaire would be noticed, completed and returned.

An additional feature of the data collection instrument to aid in increasing response rate was its division into two sections. The instructions that preceded the sections stated "Please respond to only Section I if your project has not yet been completed." This allowed project directors of ongoing projects to return a partially completed questionnaire.

To further increase the response rate, respondents were given an opportunity to request a summary report of the survey and the findings.

Cover Letter Formats

All form letters to project directors were sent under
The Population and Sample

Population

To ensure that the study sample included only directors of projects (as previously defined), considerable effort was exerted toward identifying a true population of education project managers; thus, comparison could readily be made with projects in business and in the military. Projects that were most recently completed or terminated were most desirous. The project directors' memory of project operations would be least diminished.

The population of interest in this study were project managers who had conducted projects funded either directly by the United States Office of Education or through state educational agencies. The completed projects were: a) related to the design, development, dissemination, evaluation, adaption and adoption of new educational ideas; b) operated in local school systems; and c) competitive in securing funding. Since the educational project directors were directly or indirectly under the influence of the
same federal policies and regulations, the population was expected to be homogenous.

The best way to identify project directors was to identify the projects that they managed. Literature related to the implementation of federal legislation from the United States Office of Education was reviewed to identify potential project groups with the desired characteristics. ESEA Title III projects were considered most representative for the following reasons:

1. They received the largest portion of federal funds for educational projects.

2. They were, by far, the most numerous compared to those funded under the other titles and by other education acts.

3. They covered a wide range of substantive areas and methodological approaches.

Therefore, the population of this study was limited to ESEA Title III project directors.

Population Frame

A set of ESEA Title III projects was needed from which a sample could be drawn. Limited resources demanded that the total population could not be surveyed.

The initiation of data collection was planned for the Fall of 1977. It was reasoned that if the projects were in operation in 1975, all but a few of the projects would be completed or terminated by the Fall of 1977. Tso (1976)
surveyed projects that were in operation during 1975. Therefore, the population of Title III projects pool identified by Tso was used for this study.

Tso (1976) contacted the ESEA Title III state coordinators in all fifty states and the District of Columbia requesting lists of current ESEA Title III projects operating during the summer of 1975 and the names and addresses of their project directors. Coordinators from forty-eight states and the District of Columbia responded by returning lists of projects and names and addresses of their directors. The list from Texas did not contain the names of the project directors. No responses were received from Oklahoma and Montana. A total of 2,654 Title III projects were identified and the pool of projects served as the sampling frame for the Tso study.

To ensure that all states were included in the pool, telephone calls were made by this investigator, to the ESEA Title III state coordinators of Oklahoma and Montana. Requests were made for a list of ESEA Title III projects completed by the Fall of 1977 and the names and addresses of their project directors. The original lists from Alaska and Texas were misplaced by this researcher. Telephone calls to their ESEA Title III state coordinators were made requesting replacement lists of projects completed by the Fall of 1977. All four state directors honored the request and returned lists of projects in
operation during 1975. Again, the Texas state director was not able to furnish names of the project directors. The projects from Montana and Oklahoma were added to the population pool raising the total to 2,711.

Tso noted that many of the projects in the pool were "mini-projects." Mini-projects were funded with smaller amounts of money - usually less than $8,000. They usually involve the adoption or adaptation of the results of other completed projects or "one person" research or development efforts. Since they frequently involve less than the equivalent of one full-time person, interaction relationships would be limited. With fewer interactions, the probability of potential conflict would also be reduced. Therefore, it was decided to purge the pool of mini-projects. The lists were reviewed to identify and separate the mini-projects from the rest. This process reduced the population pool which then became a sampling frame of 1876 projects. Since the mini-projects were not always identifiable, some remained in the pool. These were deleted from the sample after the questionnaires were returned using information from the questions concerning number of full-time persons and average annual budget.

Sample

Determining sample size is a compromise involving both statistical accuracy and cost considerations. In most
cases, the major practical consideration is the amount of resources available for the study. A sample size of 20% of the population pool would yield acceptable statistical accuracy and would not exhaust the available resources. It also allows for incomplete questionnaires and nonresponses.

If the same identifiable sample is utilized in two independent studies conducted during different time periods, results from the two studies could be combined into a longitudinal study. There are very few longitudinal studies of the management of projects and none in the educational environment. It was decided to seize the opportunity for a possible longitudinal study while completing the present study. The decision was made to use the Tso (1976) sample as the sample for this study.

Tso (1976) used a stratified random sampling procedure to ensure that an appropriate number of projects/project directors would be drawn from the homogenous geographical subsets of the population. Approximately 20% of each state's sampling frame was selected to bring the total to 500 projects including "mini-projects."

**Sample Adjustment**

The identified mini-projects were eliminated from the Tso sample leaving 341 projects. If the sample size by state differed from a desired 20% sample size, projects
were either added or deleted by random selection. To correct the sample size of 341, 5 new projects/project directors had to be added to the total sample.

A sample selection from the Alaska, Montana, Oklahoma and Texas lists was also done by a stratified random sampling procedure. Random numbers were matched with project numbers which identified the projects to be included in the sample. A 20% sample was selected from the lists of each of the four states. This brought the sample size to 376 projects. The distribution by state of the 1) number of ESEA Title III projects during the summer of 1975; 2) number of operating projects included in the sampling frame; and 3) number of projects/project directors selected for the study sample are illustrated in Table 5.

Data Collection

Data collection was based upon a mail survey approach following general design as outlined by Babbie (1973).

Initial Mailing

In November, 1977, an initial mailing to project directors included the following items:

1. A cover letter under the letterhead of The Ohio State University Educational Program Management Center. (Found in Appendix E)

2. A copy of the survey questionnaire. (Found in Appendix A)
TABLE 5

Number of ESEA Title III Projects Operating in 1975, Number of Projects in the Sampling Frame, and Number of Projects in the Sample, by States, for the United States.

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Projects Operating in 1975</th>
<th>Number of Projects in the Sampling Frame</th>
<th>Number of Projects in the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>35</td>
<td>35</td>
<td>7</td>
</tr>
<tr>
<td>Alaska</td>
<td>59</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Arizona</td>
<td>24</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Arkansas</td>
<td>39</td>
<td>39</td>
<td>8</td>
</tr>
<tr>
<td>California</td>
<td>150</td>
<td>150</td>
<td>30</td>
</tr>
<tr>
<td>Colorado</td>
<td>107</td>
<td>56</td>
<td>11</td>
</tr>
<tr>
<td>Connecticut</td>
<td>48</td>
<td>43</td>
<td>9</td>
</tr>
<tr>
<td>Delaware</td>
<td>12</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>16</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Florida</td>
<td>30</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>Georgia</td>
<td>118</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>Hawaii</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Idaho</td>
<td>23</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>Illinois</td>
<td>102</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Indiana</td>
<td>65</td>
<td>65</td>
<td>13</td>
</tr>
<tr>
<td>Iowa</td>
<td>39</td>
<td>39</td>
<td>8</td>
</tr>
<tr>
<td>Kansas</td>
<td>16</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Kentucky</td>
<td>12</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Louisiana</td>
<td>51</td>
<td>51</td>
<td>9</td>
</tr>
<tr>
<td>Maine</td>
<td>29</td>
<td>29</td>
<td>6</td>
</tr>
<tr>
<td>Maryland</td>
<td>20</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>17</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Michigan</td>
<td>79</td>
<td>79</td>
<td>16</td>
</tr>
<tr>
<td>Minnesota</td>
<td>42</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>Mississippi</td>
<td>27</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>Missouri</td>
<td>45</td>
<td>45</td>
<td>9</td>
</tr>
<tr>
<td>Montana</td>
<td>--</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>Nebraska</td>
<td>23</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>Nevada</td>
<td>10</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>40</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>New Jersey</td>
<td>62</td>
<td>52</td>
<td>9</td>
</tr>
<tr>
<td>New Mexico</td>
<td>8</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>New York</td>
<td>537</td>
<td>76</td>
<td>15</td>
</tr>
</tbody>
</table>
TABLE 5 Continued

Number of ESEA Title III Projects Operating in 1975, Number of Projects in the Sampling Frame, and Number of Projects in the Sample, by States, for the United States.

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Projects Operating in 1975</th>
<th>Number of Projects in Sampling Frame</th>
<th>Number of Projects in the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Carolina</td>
<td>24</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>North Dakota</td>
<td>9</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Ohio</td>
<td>91</td>
<td>91</td>
<td>17</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>--</td>
<td>38</td>
<td>8</td>
</tr>
<tr>
<td>Oregon</td>
<td>28</td>
<td>28</td>
<td>6</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>101</td>
<td>101</td>
<td>20</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>26</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>South Carolina</td>
<td>72</td>
<td>64</td>
<td>13</td>
</tr>
<tr>
<td>South Dakota</td>
<td>10</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Tennessee</td>
<td>21</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td>Texas</td>
<td>146</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>Utah</td>
<td>15</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Vermont</td>
<td>20</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Virginia</td>
<td>43</td>
<td>41</td>
<td>8</td>
</tr>
<tr>
<td>Washington</td>
<td>55</td>
<td>41</td>
<td>9</td>
</tr>
<tr>
<td>West Virginia</td>
<td>25</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>63</td>
<td>62</td>
<td>11</td>
</tr>
<tr>
<td>Wyoming</td>
<td>15</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>2,654</strong></td>
<td><strong>1,876</strong></td>
<td><strong>376</strong></td>
</tr>
</tbody>
</table>
3. A copy of the Definition of Terms. (Found in Appendix D)

4. A self-addressed, stamped, 9 x 12 return envelope.

5. All of the items were enclosed in a 9 x 12 label preaddressed envelope that was commemorative stamped to facilitate response rate.

For projects not included in the Tso study, namely those from Alaska, Montana, Oklahoma, and Texas and others, the same items were included in the first mailing. However, a different cover letter was used. A copy of this is found in Appendix E.

Follow-up Procedures

First follow-up. Five weeks after the initial mailing a reminder letter was sent to each nonresponder to again solicit their participation in the study. The letter is found in Appendix F. The letter included a postscript encouraging project directors to call collect with any questions related to the study. Several calls were received and the initial mailing packets were mailed to those who requested them.

Second follow-up. Four weeks later, the return rate was still low. Resources were considered and another mailing was planned. In late February and early March 1978, a third mailing was sent to the project directors who did not respond to the two previous mailings. A packet containing the same items as the first mailing packet was sent. A
new cover letter accompanied the packet (Found in Appendix G). The tone of this letter was more urgent. The letter again included telephone numbers for collect calls related to the study.

**Third follow-up.** Four weeks later, the third follow-up or fourth mailing was prepared for nonrespondents. Again, collect telephone calls concerning the study were invited. A copy of this letter is found in Appendix H.

**Humorous follow-up.** Following the work of Anderson and Berdie (1975), the informal questionnaire techniques were employed to increase the response rate. Three humorous cards were developed. These appear in Appendix I. The series of cards were sent weekly to nonrespondents starting in May, 1978.

**Mailings summary.** Nonrespondents received a total of seven mailings, four formal and three informal. Seven mailings exhausted the total budgeted resources and data collection efforts were terminated.

**Undelivered mail activity.** During the data collection period, attempts were made by telephone to obtain the addresses of project directors who did not receive their initial questionnaires. This process proved to be extremely expensive, trying and difficult. The telephoning was terminated after 15 attempts were made of which only 1 was fruitful. The researcher's conclusion from the attempt is that school district personnel do not keep addresses of
people who leave their employment. Moreover, even if they do have the addresses, the personnel are reluctant to share their information about former employees.

Several letters and telephone calls were received from project directors requesting questionnaires. Initial or third mailing packets were sent depending upon the timing of the receipt of the information.

**Response Rate**

The cutoff date for data collection was June 15, 1978. Among the 376 questionnaires sent in the initial mailings, 42 were not deliverable due primarily to the project directors having moved away from the school districts and not having their mail forwarded.

Eighteen project directors returned their questionnaires but refused to complete them. Of these, 5 implied that they had not received a summary report of the previous Tso study from the Educational Program Management Center and therefore, did not want to participate in this study. This may be a contributing reason for other nonrespondents.

Among the 262 returned questionnaires, 15 were rejected for analysis either because 5% or more of the questions were unanswered or because the response were related to a mini-project.
The number of usable questionnaires was 247. The net return rate was 65.7 percent. One hundred seventy-eight or 72 percent of the project directors who responded to the survey requested a summary report.

Nonresponse Bias Testing

In estimating nonresponse bias, the following variables were used to determine the representativeness of the returned questionnaires: 1) geographical USOE-ESEA Title III program management sections or areas as described in Notes and Working Papers on Administration of Programs, Title III ESEA (Miller, 1967); 2) sex of the project manager; and 3) size of the school district in which the project was located. Information other than the three variables identified was not available without extreme effort and cooperation of Title III state directors. Nonresponse bias significance was determined utilizing the Chi-square statistic. The criterion to denote the significance was selected to be at the 0.10 level of confidence.

Geographical Representation

The number of sampled projects and the number of returns by Title III program management sections are presented in Table 6. Five program management sections were involved in Title III project approval process. States administered in Section I included Connecticut, Delaware,

The computed Chi-square of 0.70 on this geographical area variable was not significant, which indicated that the returns by Title III program management section did not differ significantly from the sample.

Sex

The number of projects sampled and the number of project director responses utilized by the sex of the project directors is shown in Table 7. The obtained Chi-square for this variable was 2.34, which was not significantly different from the sample on this variable.

School District Size

The number of sampled projects and the number of returns utilized by the size of their school district is
### TABLE 6

Number of Projects Sampled and Number of Returns Utilized over ESEA Title III Program Management Sections

<table>
<thead>
<tr>
<th>ESEA Title III Program Sections</th>
<th>Number of Projects Sampled</th>
<th>Number of Returns Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I - Northeast</td>
<td>75</td>
<td>46</td>
</tr>
<tr>
<td>Section II - South</td>
<td>69</td>
<td>46</td>
</tr>
<tr>
<td>Section III - Midwest</td>
<td>104</td>
<td>67</td>
</tr>
<tr>
<td>Section IV - Southwest</td>
<td>47</td>
<td>35</td>
</tr>
<tr>
<td>Section V - Far West</td>
<td>81</td>
<td>53</td>
</tr>
<tr>
<td>TOTAL</td>
<td>376</td>
<td>247</td>
</tr>
</tbody>
</table>

Chi-square = 0.70, d.f. = 4

### TABLE 7

Number of Projects Sampled and Number of Returns Utilized by the Sex of Project Directors

<table>
<thead>
<tr>
<th>Sex of Project Manager</th>
<th>Number of Projects Sampled</th>
<th>Number of Returns Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>234</td>
<td>157</td>
</tr>
<tr>
<td>Female</td>
<td>115</td>
<td>72</td>
</tr>
<tr>
<td>Information not available</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>376</td>
<td>247</td>
</tr>
</tbody>
</table>

Chi-square = 2.34, d.f. = 2
### TABLE 8

Number of Projects Sampled and the Number of Returns Utilized By Size of School District

<table>
<thead>
<tr>
<th>Size of School District</th>
<th>Number of Projects Sampled</th>
<th>Number of Returns Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fewer than 1,000 pupils</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>1,000 to 2,499 pupils</td>
<td>57</td>
<td>30</td>
</tr>
<tr>
<td>2,500 to 4,999 pupils</td>
<td>69</td>
<td>42</td>
</tr>
<tr>
<td>5,000 to 9,999 pupils</td>
<td>69</td>
<td>49</td>
</tr>
<tr>
<td>10,000 to 24,999 pupils</td>
<td>71</td>
<td>44</td>
</tr>
<tr>
<td>25,000 to 49,999 pupils</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>50,000 pupils or more</td>
<td>55</td>
<td>38</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>376</strong></td>
<td><strong>247</strong></td>
</tr>
</tbody>
</table>

Chi-square = 6.10, d.f. = 6
summarized in Table 8. Sizes of school district were grouped into seven categories: fewer than 1,000 pupils, from 1,000 to 4,999 pupils, from 5,000 to 9,999 pupils, from 10,000 to 24,999 pupils, from 25,000 to 49,999 pupils and 50,000 or more pupils. The obtained Chi-square for this variable was 6.10, which was not significant. This indicated that the nonrespondents were not significantly different from the sample for this variable.

In summary, there was no nonresponse bias in the following three variables: 1) Title III program management sections; 2) sex of the project managers; and 3) size of the school districts. In general, the obtained data was considered adequate for analysis purposes.

Data Analysis

Business and Military Data Acquisition

To answer the major research question of the study, comparisons had to be made with results of the studies conducted in the business and military contexts. The reports of the Thamhain-Wilemon study results in business did not contain actual numeric data. Numeric data was presented in graphs. Since dimensions of graphs may change during reproduction and printing, the original data from the Thamhain-Wilemon study was needed and requested. Dr. Hans Thamhain furnished duplicate data tabulation and
recording sheets.

The data related to the Eschmann-Lee (1977) study in the military was included as Appendix E of their thesis. To aid in data analysis, they furnished a deck of computer cards containing the same tabulated data.

Educational Data

As the completed survey questionnaires were received, they were coded on each page of the questionnaire. Computer cards were key-punched from the coded pages of the questionnaires. The descriptive data was analyzed by utilizing the Statistical Package for the Social Sciences (SPSS) (Nie, et al., 1975). Computer programs were written to total and calculate the arithmetic means and standard deviations for all the appropriate responses. Responses for which these statistics were not appropriate were determined and appropriate frequency distributions were produced.

Responses to Question 1 dealing with intensity of potential conflict sources, Question 2 dealing with the timing of conflict, and Question 5 dealing with conflict resolution modes provided the data needed to answer the major research question of the study. The analysis procedures used were basically the same as those utilized in the study by Thamhain and Wilemon (1975a).
Overall Conflict Intensity Analysis

The question concerning the intensity of potential conflict sources asked project directors to indicate, on a four point scale, the intensity of conflict they experienced with each of the six interfacing groups for each of the seven potential causes of conflict. A 42 position grid (seven by six) was utilized to aid in calculations. The seven potential sources of conflict were designed along the vertical axis and the six interfacing potential parties to conflict along the horizontal axis (see Figure 12, Chapter IV).

Conflict intensity scores with a range of zero through three were summed and an arithmetic mean was computed for each of the 42 possible cells utilizing SPSS subprograms. For each of the conflict sources the mean conflict intensities were summed horizontally across the grid of the first five interfacing parties to conflict. An overall conflict intensity mean was calculated for each of the seven sources of conflict.

Thamhain and Wilemon's study identified only five interfacing groups to potential conflict. Eschmann and Lee used six. To make the best comparison across the three studies, the calculations from the same five groups were used.

The overall means of conflict intensity over the five groups were ranked to see more readily the order of ranking
of the various sources of conflict experienced by the respondents. The rankings then could be compared with the rankings reported by Thamhain and Wilemon for business and with the Eschmann and Lee study in the military.

The rank of 1 was assigned to the source of conflict with the highest mean intensity value; the second highest, a rank of 2; the third highest, a three and so forth through seven. Ties on the rank order were reconciled according to the procedure described by Siegel (1956) where each tied response was assigned the average rank value for the rank that was tied.

Life Cycle Phase Conflict Analysis

The question dealing with the timing of conflict asked project directors to indicate by checks on a grid during which of the four life cycle phases the most conflict for each of the seven potential sources of conflict occurred.

A Fortran computer subroutine was written to convert the coded data from the grid so that calculations could be made. The method used was the same one employed by Thamhain and Wilemon. A percentage was calculated for each of the four life cycle phases for each potential source of conflict by dividing the number of respondents' marks in a given life cycle phase location by the total number of marks across the four life cycle phases. To
illustrate, for Conflict over Cost, 103 marks accumulated for the project formation phase. 103 was divided by a total of 242 marks across all four phases yielding a total frequency (F) of 43 percent.

From the frequency percentages (F), a measure of conflict intensity was calculated for each of the life cycle phases. The measure of conflict intensity was calculated as the total frequency (F) expressed as a percentage, multiplied by the intensity (I) of conflict experienced within the sample of project directors. (F) ranges from 0 to 100 percent and (I) ranges from 0 to 3. For example, if the average conflict intensity experienced by project directors concerning costs with the five interfacing groups was (I) equals 0.17 (a very small amount) and 43 percent or .43 (F) of all the project directors reported that "most" of the conflict occurred during the project formation phase, then the conflict concerning costs at project formation phase would be the measure of (I) x (F) = 0.17 x .43 = 0.07.

A calculation of the measure of conflict intensity was done by hand for the seven sources of conflict over four life cycle phases on each cell of a 28 cell grid. The calculations were done to rank order the level of importance assigned by the respondents to the different sources of conflict during each life cycle phase.

The reader should be cautioned that the calculated measures are not arithmetic means in the true sense, because
the mean is divided among the four phases. The measures are utilized to give a relative position to each of the intensities identified. For each life cycle phase, the highest rank of 1 was assigned to the highest measure value; the second highest value, a rank of 2; the third highest, a 3; and so forth 7. Ties on the rank order were again reconciled according to a procedure included in Siegel (1956), where each tied response was assigned the mean rank value for the rank that was tied.

The rankings could then be compared to the rankings reported for business by Thamhain and Wilemon and to the rankings reported for the military by Eschmann and Lee.

**Conflict Resolution Mode Analysis**

The question concerning utilization of conflict resolution modes asked project directors to select proverbs describing the actual way they resolved conflict with three interfacing parties. For each party they were to indicate on a scale from one through four how accurately each particular aphorism of 15 aphorisms described their conflict resolution situations. Three aphorisms were substituted for each of the five resolution modes described in Chapter I. The numbers recorded were added for each of the five conflict resolution modes. With a minimum of one and a maximum of four, the summing of the responses of three aphorisms yielded a range of 3 through 12.
A short computer program subroutine was written to calculate the total amount for each of the five resolution modes interacting for each of the three interfacing groups. The totals were added across the three groups to produce an overall total for each of the five resolution modes for each respondent. Totals were then divided by three to yield overall arithmetic means for each conflict resolution mode.

Overall means were calculated for each respondent for each of the five resolution modes. Utilizing SPSS subprograms frequency distributions of the means of all the respondents for each of the five conflict resolution methods were printed. The overall means had ranges from 3 through 12.

The method to establish the cut-off used by Thamhain and Wilemon is somewhat unclear. In their discussion, they refer to a four point scale for each aphorism. (Thamhain and Wilemon, 1975a). However, the discussion of the analysis method is based on a scale from 0-12, which if divided by three will yield a five point scale or 0 through 4. Their cut-off numbers were 0-4 and 8-12 on a range of 0 through 12.

The range of the data for this study is from 3 through 12. Therefore, the cut-offs were set at 3-6 and 9-12. The numbers were located on the table and since percentages were calculated along with the frequency distributions, the percentages were read from the computer output tables. Two
percentages were read for each conflict resolution mode. One of them was for the percent of project directors rejecting the use of a particular method and the other for the percent preferring a particular method.

To make comparisons, both sets of percentages for preferring and rejecting were ranked. The highest rank of 1 was assigned to the method having the highest percentage of project directors; the second highest percentage, a rank of 2; the third highest, a 3; and so forth through both sets. The rank order could then be compared to the rank orders reported for the military and business studies.

Statistical Tests

To determine the level of differences among three sets of interval data, the most appropriate statistical test would be Analysis of Variance (ANOVA). The statistical testing method used to answer the major research question concerning the differences in the intensity or amount of conflict was the Analysis of Variance. Appropriate t-tests and range test statistics were utilized to identify relationships between individual variable sets.

Ranked or ordinal level data requires the use of non-parametric statistics to test for possible relationships and differences between variables and findings.
A review of the Statistical Package for the Social Sciences (Nie, et al., 1975), Siegel's Non-Parametric Statistics for the Behavioral Sciences (1956) and Downie and Heath's Basic Statistical Methods (1974) indicates that for comparison of three sets of ordinal data, Kendall's Coefficient of Concordance and the Kruskal-Wallis H Test would be the most appropriate tests.

The Kruskal-Wallis H test is used to test whether or not a group of independent samples is from the same or different populations. The calculation of Kruskal-Wallis requires an overall ranking of items. Appropriate Mann-Whitney U test statistics were utilized to identify relationships between individual variable sets when the Kruskal-Wallis H test showed significant difference. The level of significance of the statistical tests for rejection and acceptance was set at the 0.01 level.
CHAPTER IV
FINDINGS AND THEIR INTERPRETATIONS

Introduction

The problem addressed in the study was to determine if project managers in education, business, and military environments encountered similar or different amounts of conflict in managing their projects, to determine if they encountered several types of conflict at the same or different levels during the four phases of the life-cycle of their projects, and to determine if the preferred and rejected modes of conflict resolution were the same or different for the three environmental contexts.

To address the problem of identifying differences and similarities, results derived from the responses of the project managers in education from the studies in business and in the military are presented, compared, and discussed in this chapter. A review of testing procedures used and their results are presented for each of the three major research questions posed in Chapter I. Interpretation of the findings present potential explanations concerning the management of projects in the three environmental contexts.
Research Question I - Conflict Comparisons

Research Question I asked if project managers in education, business, and the military encountered different amounts or intensities of conflict for seven potential sources of conflict over entire project life cycles and if the rank order of the seven conflict intensities differed for the three environmental contexts.

To answer the research question concerned with establishing the differences, the null/alternative hypothesis testing method was utilized. Research Question I had two parts. The first dealt with the intensity or amount of overall conflict and the second dealt with the ranking of the sources of conflict. The question was, therefore, divided into two sets of null/alternative hypothesis.

Hypothesis Sets

Intensity Set. Using the Mendenhall et al. (1974) nomenclature for presentation, the test statements follow below:

Null Hypothesis I, H₀: The mean intensities of conflict are not different and are drawn from the same population.

Alternative Hypothesis I, H₁: At least one of the population mean intensities is different from the others.
Significance level for rejecting the null hypothesis was set at alpha = 0.01.

**Rank Set. Null Hypothesis II, H₀:** The rank orders of the mean intensities of conflict sources of all three samples are not different and all are drawn from identical populations.

**Alternative Hypothesis II, H₂:** At least one of the three samples of the rank orders of the mean intensities of conflict sources are different and are drawn from a population that was not identical to the other populations.

Significance level for rejecting the null hypothesis was set at alpha equal to 0.01.

**Conflict Intensities**

For the educational data, arithmetic means of the intensity of conflict for each of the seven sources of conflict for each of the interacting parties to conflict were calculated. Arithmetic means were also calculated for the Eschmann and Lee (1977) study of project managers in the military environment and for the data provided by Thamhain for the Thamhain and Wilemon (1974, 1975a, 1975b, 1975c, 1975d) study of project managers in business. The mean intensities of conflict sources with interacting parties of business, military, and education projects are presented in tabular form in Table 9 and in graphical form in Figure 12. Both the means and standard deviations for
TABLE 8
Mean Intensities of Conflict Sources with Interacting Parties of Business, Military nd Education Projects.

<table>
<thead>
<tr>
<th>CONFLICT SOURCE</th>
<th>SUBORDINATES BUS.</th>
<th>SUBORDINATES MIL.</th>
<th>SUBORDINATES EDU.</th>
<th>ASSIGNED PERSONNEL BUS.</th>
<th>ASSIGNED PERSONNEL MIL.</th>
<th>ASSIGNED PERSONNEL EDU.</th>
<th>FUNCTIONAL DEPTS. BUS.</th>
<th>FUNCTIONAL DEPTS. MIL.</th>
<th>FUNCTIONAL DEPTS. EDU.</th>
<th>SUPERIOR BUS.</th>
<th>SUPERIOR MIL.</th>
<th>SUPERIOR EDU.</th>
<th>TEAM MEMBERS BUS.</th>
<th>TEAM MEMBERS MIL.</th>
<th>TEAM MEMBERS EDU.</th>
<th>FUNDING AGENCY BUS.</th>
<th>FUNDING AGENCY MIL.</th>
<th>FUNDING AGENCY EDU.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHEDULES</td>
<td>0.53 0.26 0.33</td>
<td>1.48 0.52 0.34</td>
<td>1.85 0.80 0.37</td>
<td>0.99 0.41 0.18</td>
<td>1.08 0.55 0.30</td>
<td>1.08 0.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRIORITIES</td>
<td>0.64 0.29 0.28</td>
<td>1.22 0.71 0.30</td>
<td>1.69 1.10 0.37</td>
<td>0.66 0.51 0.24</td>
<td>0.92 0.72 0.35</td>
<td>1.24 0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANPOWER</td>
<td>0.64 0.23 0.23</td>
<td>1.11 0.56 0.22</td>
<td>1.50 1.14 0.32</td>
<td>0.82 0.54 0.26</td>
<td>0.77 0.63 0.18</td>
<td>0.48 0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>0.80 0.35 0.31</td>
<td>1.06 0.70 0.36</td>
<td>1.25 0.78 0.35</td>
<td>0.74 0.48 0.18</td>
<td>1.06 0.57 0.32</td>
<td>1.04 0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>0.76 0.31 0.23</td>
<td>0.93 0.63 0.26</td>
<td>1.06 0.91 0.31</td>
<td>0.84 0.53 0.30</td>
<td>0.65 0.68 0.24</td>
<td>0.79 0.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERSONALITY</td>
<td>0.63 0.20 0.31</td>
<td>0.80 0.42 0.37</td>
<td>0.83 0.42 0.33</td>
<td>0.48 0.29 0.19</td>
<td>0.93 0.41 0.47</td>
<td>0.46 0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COSTS</td>
<td>0.40 0.16 0.14</td>
<td>0.74 0.36 0.11</td>
<td>0.98 0.61 0.27</td>
<td>0.67 0.33 0.21</td>
<td>0.49 0.41 0.10</td>
<td>0.82 0.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARTY MEANS</td>
<td>0.69 0.26 0.26</td>
<td>1.05 0.56 0.28</td>
<td>1.31 0.82 0.33</td>
<td>0.74 0.44 0.22</td>
<td>0.84 0.57 0.28</td>
<td>0.87 0.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Range: Minimum = 0, Maximum = 3.)
Figure 12. Mean Intensities of Conflict Sources with Interacting Parties of Education, Military, and Business Projects.
the conflict sources with interfacing parties are presented in Table 27 in Appendix L.

Inspection of Table 9 shows that with few exceptions, the means of conflict intensity for business were larger than the means for the military. All of the means in business were much larger than the means in education. Also, with a few exceptions, the means for military were larger than the means for education. On the 0 to 3 scale, the means for education represent only about 10% of the maximum. The largest mean was conflict over schedules with functional departments in business and the smallest was conflict over cost and cost objectives between team members in education.

The differences can more readily be seen in Figure 12. The solid dark bars represent the business means and extend to the right the farthest. The speckled bars represent military means and do not extend as far and are shorter. The education means are represented by unshaded bars and are the shortest. Figure 12 shows more clearly that a large amount of the conflict encountered in the military was with outside funding agencies.

The overall totals were calculated directly from the data rather than by summing. For all three contexts, the greatest amount of conflict was encountered with the functional departments. The least intensity of conflict was
with subordinates for military and business project managers while the least for education was with superiors.

**Overall Mean Intensity.** To determine the composite intensity of conflict for the education data, the arithmetic means for the five groups common to all three studies were summed and a composite arithmetic mean was calculated for each of the seven conflict sources. (See Table 10). The reader should bear in mind that the findings reported in the Eschmann and Lee study were based on arithmetic means of intensities for six parties to potential conflict. Means of intensities of conflict from only five parties to potential conflict common to all three environmental contexts were to be used for comparison. Therefore, the Eschmann and Lee data were recalculated for the same five parties.

The calculated values for the means of conflict intensity for data provided from the Thamhain and Wilemon study do not closely match their reported graphical results. Further, using scaled values for the graphs, the data across several graphs presented by Thamhain and Wilemon did not seem to totally agree. A letter from Dr. Thamhain suggested using derived numbers from Figure 2 of the Thamhain and Wilemon paper "Conflict in Project Life Cycles" as a point of reference. (See Appendix L). The calculations from the data provided and the measured scale values of these two closely match. This indicated
<table>
<thead>
<tr>
<th>Conflict Source</th>
<th>BUSINESS (N=96) Mean (S.D.)</th>
<th>Rank</th>
<th>MILITARY (N=136) Mean (S.D.)</th>
<th>Rank</th>
<th>EDUCATION (N=247) Mean (S.D.)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedules</td>
<td>1.26 (0.53)</td>
<td>1</td>
<td>0.51 (0.46)</td>
<td>5</td>
<td>0.30 (0.38)</td>
<td>3.5</td>
</tr>
<tr>
<td>Priorities</td>
<td>1.01 (0.44)</td>
<td>2</td>
<td>0.66 (0.46)</td>
<td>1</td>
<td>0.31 (0.32)</td>
<td>2</td>
</tr>
<tr>
<td>Manpower</td>
<td>0.98 (0.51)</td>
<td>3</td>
<td>0.62 (0.54)</td>
<td>2</td>
<td>0.24 (0.31)</td>
<td>6</td>
</tr>
<tr>
<td>Specifications</td>
<td>0.97 (0.47)</td>
<td>4</td>
<td>0.58 (0.41)</td>
<td>4</td>
<td>0.30 (0.36)</td>
<td>3.5</td>
</tr>
<tr>
<td>Administration</td>
<td>0.87 (0.53)</td>
<td>5</td>
<td>0.61 (0.48)</td>
<td>3</td>
<td>0.27 (0.34)</td>
<td>5</td>
</tr>
<tr>
<td>Personality</td>
<td>0.74 (0.48)</td>
<td>6</td>
<td>0.35 (0.38)</td>
<td>7</td>
<td>0.33 (0.36)</td>
<td>1</td>
</tr>
<tr>
<td>Costs</td>
<td>0.64 (0.42)</td>
<td>7</td>
<td>0.38 (0.39)</td>
<td>6</td>
<td>0.16 (0.26)</td>
<td>7</td>
</tr>
<tr>
<td>Context Mean</td>
<td>0.93</td>
<td></td>
<td>0.53</td>
<td></td>
<td>0.28</td>
<td></td>
</tr>
</tbody>
</table>

(Scale: Minimum = 0. Maximum = 3.)

NOTE: (S.D.), the number within the parenthesis is the standard deviation.
that the data provided was consistent with graphic presentations. The arithmetic means of the intensity of conflict that were used for comparison were calculated from the furnished data.

The mean intensities of conflict of seven sources of conflict (over the entire life-cycle of projects) are presented in Table 10 and Figures 13 and 14.

Inspection of Table 10 shows that the means of conflict intensity of the seven conflict sources for business were larger than for both the military and education contexts. The military means for the seven conflict sources were larger than those for education.

Table 10 also shows that the largest means for each context are conflict over schedules for business, conflict over project priorities for military, and personality conflict for education project managers. In each of the contexts, the smallest mean seems to be about half as large as the largest mean.

The plotted values of the means appear in Figure 13 and illustrate that business has the largest means with military second and education the lowest. To better illustrate this distribution, a line graph was created and is shown in Figure 14. The line graph dramatically shows the different levels of conflict for the three contexts. There are no crossing lines occurring, indicating that
Figure 13. Mean Intensities for Conflict Sources over Education, Military, and Business Project Life-Cycles.
Figure 14. Mean Intensities for Conflict Sources over Business, Military, and Education Project Life-Cycles.
there may be little interaction. Possible similarities may exist with personality conflict between the military and education contexts. The differences between the means of conflict intensity is relatively small.

Test Results. The one-way analysis of variance was used to compare the overall mean intensities of conflict of each of the seven potential sources of conflict. F ratios and the degrees of freedom were calculated. Summary tables of the analysis of variance are included as Appendix K. The F ratios, degrees of freedom, and the acceptance or rejection of the null hypothesis are presented in Table 11.

The null hypothesis must be rejected if the calculated value of F is greater than the Table value of F for alpha equal to 0.01 and the calculated degrees of freedom. For each of the seven sources of conflict, Table 11 shows that the F ratios exceeded the table value at the alpha level of 0.01 and also exceeded it at least at the 0.0001 level. For all seven sources of conflict, the null hypotheses were rejected and all alternative Hypothesis I's that at least one of the population mean intensities is different from the others were accepted. Subsequently, t-tests were run for all combinations.

Except for the conflict source of Personality Conflict between education and military context which was statistically significantly different at the 0.02 level, all
### TABLE 11

Analysis of Variance Results from Sources of Conflict in the Education, Business, and Military Environments

<table>
<thead>
<tr>
<th>Source of Conflict</th>
<th>Calculated F Ratio (d.f.1=2)</th>
<th>Degrees of Freedom (2)</th>
<th>Table Value F Ratio Alpha = 0.01</th>
<th>Null Hypothesis Reject</th>
<th>Cannot Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>165.28</td>
<td>475</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Priorities</td>
<td>119.37</td>
<td>474</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Manpower</td>
<td>101.65</td>
<td>476</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Specifications</td>
<td>94.15</td>
<td>472</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>75.61</td>
<td>475</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Personality</td>
<td>40.50</td>
<td>476</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>70.33</td>
<td>476</td>
<td>4.61</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Table Value (F) Ratio = 4.61 for d.f.1 = 2, d.f. 2 = 476, Alpha = 0.01
of the combinations were statistically significantly different at the 0.01 level or better.

**Rank Order**

The rank orders of the mean intensity for the seven conflict sources were determined for each of the three contexts. The rank order number is located next to the means in Table 10. The calculated rank order values for the business study and military data were identical with the reported rank orders for the two studies.

Inspection of the ranks in Table 10 reveals that for the business environment, conflict over Schedules ranked highest and conflict over Project Priorities ranked second. In the military context, conflict over Priorities ranked highest and conflict over Manpower Resources ranked second. In education, Personality conflict ranked highest and conflict over Project Priorities was ranked second.

Across the three contexts, conflict over Project Priorities was either ranked first or second highest. As also seen in Table 10 across the environments, conflict over Costs and Cost Objectives was consistently low, ranked either sixth or seventh out of seven.

**Test Results.** The Kruskal-Wallis H was used to compare the ranks of the mean intensities of the sources of conflict across the environmental contexts. The Kruskal-Wallis H was calculated using the method detailed by
Siegel (1956) and Downie and Heath (1974).

To reject the null hypothesis for alpha equal to 0.01, and the degrees of freedom equal to 2, \( H \) would have to equal 9.21 or higher. The Kruskal-Wallis \( H \) for the ranks of the mean intensities of the seven sources of conflict for business, military, and education projects was 17.57.

The calculated value for \( H \) was higher, which led to the rejection of Null Hypothesis II. The alternative hypothesis that at least one of the three context groups of project managers differs from the other with respect to the overall mean intensities of conflict was accepted. In other words, the ranking of conflict sources were different among the three contexts.

Answer to Research Question I

With the rejection of the two sets of null hypotheses, Research Question I was answered in the affirmative. Project managers in education, business, and the military encounter different amounts or intensities of conflict for seven potential sources of conflict over the entire project life cycle and that the rank order of the seven conflict intensities are different for the three environmental contexts.
Research Question II - Life Cycle Phase Conflict

Research Question II asked if the rank order of the measures of the relative intensity of conflict for the seven potential sources of conflict during each of the four cycle phases of a project differed for project managers in education, business, and the military. To answer the research question concerned with establishing the differences to be true, the null/alternative hypotheses testing method was utilized.

Hypotheses Set

One set of the following applies to each project life cycle phase.

Null Hypothesis, $H_0$: There is no difference among the three groups of project managers with respect to the ranks of measures of relative intensity of conflict.

Alternative Hypothesis, $H_a$: At least one of the three groups of project managers was drawn from a population that was not identical to the other populations and differs with respect to the ranks of measures of relative intensity of conflict.

The significance level for rejecting the null hypothesis was set at alpha = 0.01.
Measure Calculations

Measures of relative intensities of the seven potential conflict sources over the four life cycle phases for both business and education data were calculated using the method described in Chapter III under Life Cycle Phase Conflict Analysis.

For the military data, a different method was used to calculate the measures of relative intensities of the seven potential sources of conflict over the life cycle phases since the design of the Eschmann and Lee study concerning this aspect differed from the business study and the current study in education. Eschmann and Lee surveyed military program managers managing projects and programs in progress during each of the four life cycle stages. This education study and the business study surveyed project managers of projects that were completed. Because of this difference, another method was used to make the calculations.

To calculate the measures of relative conflict intensity for the military study, project manager responses had to be divided into the four life cycle stages during which their program was in operation. Arithmetic means of the intensity of conflict for each of the seven sources of conflict were then calculated for the four life cycle stages.
The reader should bear in mind that the findings reported in the Eschmann and Lee study are based on arithmetic means of intensity for six parties to potential conflict. (See Figure 9 in Chapter II and Appendix J). Means of intensity of conflict from the five parties to potential conflict common to all three environmental contexts were used for the calculations.

**Life Cycle Results**

The measures of relative conflict intensity for the seven conflict sources are presented in numerical form for business and education by life cycle phases in Table 12. The total mean of the measure of relative conflict intensity was calculated by summing the columns. In graphic form, the measures of the relative intensity of conflict for only educational data are shown in Figure 15. The calculated measures from business data closely matches the Thamhain and Wilemon scaled values shown as Figure 5 in Chapter II.

Inspection of Table 12 reveals that all measures of relative intensity of conflict for business projects are higher than measures for education projects. Since the calculation of the measures depend on the overall mean of the intensity of conflict for the seven sources of conflict, it was expected that the business measures would be larger.
TABLE 12
Measure of Relative Intensity of Conflict Sources over the Four Life-Cycle Phases for Business and Education Projects Based on Five Interacting Parties

<table>
<thead>
<tr>
<th>CONFLICT SOURCES</th>
<th>AT THE PROJECT FORMATION</th>
<th>AT THE EARLY PROGRAM PHASES</th>
<th>DURING THE MAIN PROGRAM PERIOD</th>
<th>TOWARD THE END OF THE PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BUS.</td>
<td>EDU.</td>
<td>BUS.</td>
<td>EDU.</td>
</tr>
<tr>
<td>SCHEDULES</td>
<td>0.241</td>
<td>0.067</td>
<td>0.318</td>
<td>0.103</td>
</tr>
<tr>
<td>PRIORITIES</td>
<td>0.278</td>
<td>0.132</td>
<td>0.361</td>
<td>0.099</td>
</tr>
<tr>
<td>MANPOWER</td>
<td>0.233</td>
<td>0.063</td>
<td>0.281</td>
<td>0.073</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>0.186</td>
<td>0.070</td>
<td>0.304</td>
<td>0.116</td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>0.281</td>
<td>0.070</td>
<td>0.306</td>
<td>0.123</td>
</tr>
<tr>
<td>PERSONALITY</td>
<td>0.163</td>
<td>0.047</td>
<td>0.207</td>
<td>0.100</td>
</tr>
<tr>
<td>COST</td>
<td>0.224</td>
<td>0.061</td>
<td>0.165</td>
<td>0.038</td>
</tr>
<tr>
<td>LIFE CYCLE</td>
<td>0.229</td>
<td>0.073</td>
<td>0.277</td>
<td>0.093</td>
</tr>
</tbody>
</table>

(Large numbers indicate more conflict)
Fig. 15. Measure of Relative Intensity of Conflict Sources over the Four Life-Cycle Phases for Education Projects based on Five Groups. (Higher numbers indicate more conflict)
The largest measures of relative intensity for each of the phases for business were conflict over Administrative Procedures at project formation, conflict over Project Priorities at the early program phase and conflict over Schedules for both the main program period and toward the end of the program. For education project managers the largest measures were conflict over Project Priorities at project formation, conflict over Administrative Procedures and Personality conflict for both the main program period and toward the end of the program phase.

For education projects, a dramatic drop in the mean conflict intensity or total mean of the measures of relative intensity that occurs toward the end of the program phase appears in Figure 15. Inspection of corresponding figures for business (Figure 5 in Chapter II) and for military (Figure 9 in Chapter II) projects also shows the drop. The means appear to drop from highs at project formation or at the early program phases to lower levels during the main program period. All three means then drop lower toward the end of the program.

For the military data, arithmetic means for the five common groups appear as revised measures of relative intensity of the seven conflict sources over the four life-cycle categories of defense programs along with the relative rank of the seven conflict sources in Table 13.
<table>
<thead>
<tr>
<th>CONFLICT SOURCES</th>
<th>AT THE PROJECT FORMATION</th>
<th>AT THE EARLY PROGRAM PHASES</th>
<th>DURING THE MAIN PROGRAM PERIOD</th>
<th>TOWARD THE END OF THE PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
</tr>
<tr>
<td>SCHEDULES</td>
<td>0.627 (5)</td>
<td></td>
<td>0.548 (5)</td>
<td></td>
</tr>
<tr>
<td>PRIORITIES</td>
<td>0.713 (2)</td>
<td></td>
<td>0.757 (1)</td>
<td></td>
</tr>
<tr>
<td>MANPOWER</td>
<td>0.820 (1)</td>
<td></td>
<td>0.676 (2)</td>
<td></td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>0.680 (3)</td>
<td></td>
<td>0.624 (4)</td>
<td></td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>0.653 (4)</td>
<td></td>
<td>0.633 (3)</td>
<td></td>
</tr>
<tr>
<td>PERSONALITY</td>
<td>0.353 (7)</td>
<td></td>
<td>0.348 (7)</td>
<td></td>
</tr>
<tr>
<td>COSTS</td>
<td>0.393 (6)</td>
<td></td>
<td>0.424 (6)</td>
<td></td>
</tr>
<tr>
<td>LIFE CYCLE</td>
<td>0.606</td>
<td></td>
<td>0.573</td>
<td></td>
</tr>
</tbody>
</table>

(Larger numbers indicate more conflict)
The life cycle means were calculated by summation of the column means. The largest means for each of the phases were conflict over Manpower Resources at project formation, conflict over Administrative Procedures during the main program period and conflict over Project Priori­ties at the early program phases and toward the end of the program.

The measures of relative intensities of conflict for all three environments were ranked in order with 1 as the highest and 7 as the lowest for each of the four life cycle phases. The ranks appear in Table 14. The ranks were also plotted across the four life cycle phases into trends of conflict sources intensities. These appear along with the rank values in Figure 16. The reader is cautioned that the plotted rank values in Figure 16 appear to look like histograms but they are not. The ranks were plotted in this fashion to visually emphasize the ranks over time (trends).

Inspection of Table 14 and Figure 16 does not reveal any recognizable similarity patterns among the ranks and trends. There appears to be a pattern relationship between the rank of the overall mean for each of the contexts with the measures in that context. Because one of the factors constituting measures was the overall intensity for each conflict source, one would expect a similarity pattern.
TABLE 14
Rank of the Intensity of Conflict Sources over the Four Life-Cycle Phases for Education, Business, and Military Projects.

<table>
<thead>
<tr>
<th>CONFLICT SOURCES</th>
<th>AT THE PROJECT FORMATION</th>
<th>AT THE EARLY PROGRAM PHASES</th>
<th>DURING THE MAIN PROGRAM PERIOD</th>
<th>TOWARD THE END OF THE PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BUS.</td>
<td>MIL.</td>
<td>EDU.</td>
<td>BUS.</td>
</tr>
<tr>
<td>SCHEDULE</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>PRIORITIES</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>MANPOWER</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>PERSONALITY</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>COST</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

(Rank: 1 = highest, 7 = lowest)
Figure 16. Comparison of Rank Order Profiles of Conflict Source Intensities over the Four Life-Cycle Phases in Business, Military and Education Projects. (Heights of conflict profiles and numbers in the cells represent rank order. Highest rank = 1.)
Test Results

The Kruskal-Wallis H test was used to compare the ranks of the measures of relative intensity of conflict sources across the three environmental contexts for the four life cycle phases. The Kruskal-Wallis H was calculated using the method detailed in Siegel (1956) and Downie and Heath (1974).

To reject the null hypothesis for alpha equal to 0.01 and the degrees of freedom equal to 2, H would have to equal 9.21 or higher. The calculated values of the Kruskal-Wallis H for the four life cycle phases and the results are shown in Table 15. For each of the four life cycle phases the null hypothesis was rejected, thus rejecting all null hypotheses. The alternative hypotheses that at least one of the three groups of project managers was drawn from a population that was not identical to the other populations with respect to the ranks of measures of relative intensity of conflict, were accepted for each of the four life cycle phases.

Mann-Whitney U tests were also calculated to check differences between groups. All U tests showed significant difference at least at 0.01 level.

Answer to Research Question II

With the acceptance of the four alternative hypotheses, Research Question II was answered affirmatively. The
TABLE 15
Kruskal-Wallis H Determination of the Ranked Conflict Sources for the Four Life-Cycle Phases

<table>
<thead>
<tr>
<th>Life Cycle Phases</th>
<th>Calculated Kruskal-Wallis H d.f. = 2</th>
<th>Null Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Formation</td>
<td>15.65*</td>
<td>Reject X</td>
</tr>
<tr>
<td>Early Program</td>
<td>14.31*</td>
<td>Reject X</td>
</tr>
<tr>
<td>Main Program Period</td>
<td>12.81*</td>
<td>Reject X</td>
</tr>
<tr>
<td>End of Program</td>
<td>16.27*</td>
<td>Reject X</td>
</tr>
</tbody>
</table>

Note. Table Value of Kruskal-Wallis H = 9.21 for d.f. = 2 and alpha = 0.01.

*Significant at less than the 0.01 level.
rank orders of the measures of relative intensity of conflict for the seven potential sources of conflict during each of the four life cycle phases of a project were different for project managers in education, business and the military.

Research Question III - Conflict Resolution Modes

Research Question III asked if the rank orders of the percent of project managers preferring or rejecting particular conflict resolution methods in education, business and the military were similar. To answer the research question concerned with rejecting the difference and establishing similarity, the null/alternative hypotheses testing method was utilized.

Hypotheses Sets

One set of the following hypotheses applies to each of the two parts of the question, preferring and rejecting.

Null Hypothesis, \( H_0 \): There is no difference among the three groups' project managers with respect to the ranks of the percentage preferring particular conflict resolution methods (i.e., the sample of project manager scores were drawn from identical populations).

Alternative Hypothesis, \( H_a \): At least one of the three groups of project manager scores was drawn from a population that was not identical to the other populations.
and differs with respect to the rank orders of the percent of project managers preferring particular conflict resolution methods.

The significance level for rejecting the null hypothesis was set at alpha = 0.10.

Resolution Methods Results

Percentages of project managers preferring and rejecting particular methods of conflict resolution were calculated for education, military, and business. The calculations utilized were described in Chapter II under Conflict Resolution Mode Analysis. The percentages appear in Table 16 and in graphical form in Figure 17.

The percents were then ranked with the highest rank equal to 1 and the lowest equal to 5. The ranks of the percent of education, military, and business project managers preferring or rejecting modes of conflict resolution appear in Table 17. The reader is cautioned that in reviewing the Thamhain and Wilemon study, the graphed and the calculated percentages do not match closely; however, the rank order does match identically.

Inspection of Figure 17 and Table 16 reveals project managers from all three environments preferred by the largest percentages of their groups the Confrontation or the Problem Solving method of conflict resolution. Each group of project managers also had the smallest percentage
<table>
<thead>
<tr>
<th>MODES OF CONFLICT RESOLUTION</th>
<th>REJECTED</th>
<th></th>
<th></th>
<th>PREFERRED</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BUS.</td>
<td>MIL.</td>
<td>EDU.</td>
<td>BUS.</td>
<td>MIL.</td>
<td>EDU.</td>
</tr>
<tr>
<td>CONFONTING</td>
<td>2.3</td>
<td>10.6</td>
<td>11.2</td>
<td>44.2</td>
<td>50.4</td>
<td>47.9</td>
</tr>
<tr>
<td>COMPROMISE</td>
<td>20.5</td>
<td>26.8</td>
<td>25.7</td>
<td>21.6</td>
<td>22.0</td>
<td>22.5</td>
</tr>
<tr>
<td>SMOOTHING</td>
<td>39.1</td>
<td>50.4</td>
<td>21.9</td>
<td>18.4</td>
<td>24.4</td>
<td>31.6</td>
</tr>
<tr>
<td>FORCING</td>
<td>48.9</td>
<td>53.7</td>
<td>59.0</td>
<td>10.2</td>
<td>8.9</td>
<td>6.3</td>
</tr>
<tr>
<td>WITHDRAWAL</td>
<td>53.5</td>
<td>61.0</td>
<td>43.2</td>
<td>4.7</td>
<td>8.9</td>
<td>13.2</td>
</tr>
</tbody>
</table>
Figure 17. Modes of Conflict Resolution Preferred or Rejected by Education, Military, and Business Project Managers.

<table>
<thead>
<tr>
<th>Modes of Conflict Resolution</th>
<th>Percent of Education, Military, and Business Project Managers Whose Style Seems to Reject This Mode</th>
<th>Percent of Education, Military, and Business Project Managers Whose Style Seems to Favor This Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confrontation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compromise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoothing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forcing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Confrontation: 60%, 40%, 20%, 0%
- Compromise: 60%, 40%, 20%, 0%
- Smoothing: 60%, 40%, 20%, 0%
- Forcing: 60%, 40%, 20%, 0%
- Withdrawal: 60%, 40%, 20%, 0%
of their groups rejecting the use of the Problem Solving method for resolving conflict.

The largest percentage of project managers rejecting a conflict resolution mode were Withdrawal by the military group at 61.0%, Forcing by the education group at 59.0% and Withdrawal by the business group at 53.5%. The smallest percent of project managers preferring a conflict resolution mode also followed the same pattern. The smallest percents were Withdrawal by business at 4.7%, Forcing by education at 6.3% and Withdrawal by military project managers at 8.90%.

With two exceptions, the percentages across the three contexts for each of the resolution modes did not vary by large amounts. The percents were about a 10 point difference from the lowest to the highest percentage. The two exceptions were the rejection percentage for Smoothing and Withdrawal. The variation between the highest and the lowest were about 20 percentage points. The closest agreement was the percentage preferring the Compromise mode.

Inspection of Table 17 reveals very little differences in rank orders among the three contexts. For the rejection section, the ranks for business and military are identical. The rank order of education shows only two reversals with respect to the military and business ranks. Compromise and Smoothing were reversed and Forcing and Withdrawal were reversed.
<table>
<thead>
<tr>
<th>MODES OF CONFLICT RESOLUTION</th>
<th>REJECTED</th>
<th>PREFERRED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BUS. RANK</td>
<td>MIL. RANK</td>
</tr>
<tr>
<td>CONFRONTING</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>COMPROMISE</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SMOOTHING</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>FORCING</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>WITHDRAWAL</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

(Rank: highest percent = 1, lowest percent = 5.)
For the preferred section, the rank orders of the military and business differed by only one reversal. Compromise was reversed with Smoothing. The rank orders of the military and education also differed by only one reversal. Forcing and Withdrawal were reversed. With exceptions of the reversals, the ranks were identical.

Test Results

The Kruskal-Wallis H test was used to compare the ranks of the percentage of project managers preferring or rejecting particular conflict resolution modes across the three environmental contexts. To reflect the null hypothesis for alpha equal to 0.10 and the degrees of freedom equal to 2, H would have to equal 4.56.

Preferred Modes. The calculated value of the Kruskal-Wallis H for the rank of percentage of project managers preferring modes of resolution was 0.98. H in this case was lower which led to the nonrejection and acceptance of the null hypothesis. Therefore, the rank orders of the percentage of project managers preferring particular conflict resolution methods in the three environments were similar.

Rejection Modes. The calculated value of the Kruskal-Wallis H for the rank of percentage of project managers rejecting modes was 0.56. H in this case was
lower, which led to the nonrejection and acceptance of the null hypothesis. Therefore, the rank orders of the percent of project managers rejecting particular conflict resolution methods in the three environments were similar.

Answer to Research Question III

With the acceptance of the alternative hypothesis and the nonrejection of the null hypotheses, Research Question III was answered affirmatively. The rank orders of the project managers preferring or rejecting particular conflict resolution methods in education, business, and the military were similar.

Interpretation of Findings

The answers to the three research questions led to the findings that project managers in the three environmental contexts perceive different intensities of conflict for the seven conflict sources, the ordering of the intensity of conflict for the seven conflict sources among the three contexts were different, and the orderings of a measures of the relative intensity of conflict for the seven conflict sources for the four life cycle phases among the three contexts were different. In contrast, the orderings of the percent of project managers preferring and rejecting five methods of resolving conflict were similar.
The observed findings may be possibly explained by measurement and methodological aspects, and differences and similarities in the environments within which the project managers must work, including the expectations of the skill and attitudes of anyone working in a field of endeavor.

**Measurement Aspects**

There are aspects of measurement of the phenomenon of conflict in project management by the three studies that offer possible explanation of the findings.

**Method.** The method utilized to collect the data was by survey. For the study in business, data was collected by a direct mail survey and then by interview. For the military study the survey instrument was hand delivered and for education the survey was done by direct mail.

The usable return rate for the three surveys was between 65 and 70 percent. Compared with other studies discussed in the literature, a usable return rate of 65 to 70 percent would be considered quite high.

It is not directly known that the use of a different method such as telephone interview, personal interview, or direct observation would produce different findings. It is also not directly known if the variation in the methods among the three studies may have influenced the findings. With the little but unscientific evidence related to interview and direct observations, one would...
conclude that the interview and observation methods would yield the same finding. However, it is possible that methods other than the survey method used to collect data would have yielded different results.

Most of the methods utilized in data analysis were straightforward calculation of means and ranks. However, a discrepancy may exist between the reported finding and the possible "true" findings.

The problem concerns the calculation and use of the "measure" of relative conflict intensity in Research Question II. There are two contributing factors in the calculation of the measures of relative intensity of conflict for the business study and this study in education. One of the factors is the overall mean of conflict intensity and the other is a timing factor in the form of a percentage derived from the question in the instruments related to conflict during each of four life cycle phases. The contribution of the overall mean of conflict intensity to the explanation of the findings will be discussed later in this chapter under the topic Conflict Intensity.

The timing factor and its relationship to the measure as developed by Thamhain and Wilemon is of concern here. Thamhain and Wilemon assigned the value of 1 to any check or mark in the boxes of the question concerned with the life cycle phase timing of conflict and a zero where there were no marks. (See Appendices A and B).
A check in one of the life cycle phase boxes indicated the timing of conflict occurred during that life cycle phase. If a respondent made checks in four different life cycle phase boxes, it would indicate that the respondent had conflict during the four life cycle phases. However, with the assignment of the number one to each box marked, the amount of conflict over the total life cycle would be four times larger than for only one check. This method also applied to checks in the "almost equal in all periods" box.

Once the numbers were assigned they were summed for each of the conflict sources. A percentage was calculated for each of the conflict sources for each of the life cycle phases, yielding a timing factor.

The "measures" were then calculated by multiplying the timing factor in percentage with the overall mean intensity of conflict. In effect, the overall mean intensity was partitioned among the four life cycle phases. Summing across the measures of the four life cycle phases for a particular conflict source yields the overall mean intensity of conflict for that conflict source. The use of the statistic is somewhat suspect in this application.

Because the statistic was developed and published by Thamhain and Wilemon, and it was desirable to make comparison with the business study, the measure was calculated and used in the current study. It was identified as a measure
rather than as a mean. Since the measure is not an established statistic it may not be descriptive of the "true" situation with respect to conflict during the phases of the life cycle of projects.

An additional concern with the conflict over the life cycle data is that the design of the military study was different from the studies in business and education. The military study surveyed project managers that were managing the current operations of their projects in each of the life cycle phases. The business and current education studies surveyed project managers who had completed their projects.

It is possible that the Eschmann and Lee and this study made comparison of measures of conflict intensity that were not alike. This difference may contribute to the explanation of the differences identified in the findings.

Sample. The samples from the populations of the three studies were selected by a random or stratified random selection process. For the business study, the process was random selection of project managers in high technology. For the military study, the sample selection was stratified with respect to life cycle defense program phases and then randomly selected from project managers in each phase. The education sample for the current study was geographically stratified by state. The sample was then
randomly selected from the population of projects from each state.

With a relatively high usable return rate of 65 to 70 percent, one would expect that a survey sample would be representative of a given population. However, the nonreturns may be skewed in a particular direction which would influence the findings. There is a little, non-scientific evidence from conversations with Thamhain, Eschmann and Lee and unused returns from this study that leads one to believe that the nonreturns would not skew the results excessively.

Even though the samples were selected randomly and usable return rate was relatively high, it is possible that the samples used to yield the findings were not representative of populations. Further, the populations selected for the business and military studies may not be representative of all business and military project managers.

**Continuity of Variables.** The lack of continuity of some variables like types and sizes of projects across the three contexts may be a contributing factor for explaining the findings. It is reasonable to hypothesize that managers of research and development projects where the technology is not as well known will encounter more conflict than managers of installation or adaptation projects.
Some data has been collected related to variables of this type in three contexts, but it is not consistent. On the size of the project, only this study in education gathered data on the full-time equivalent personnel or project staff. The business study collected data on the dollar amount of projects, as did the current study. The military study did not report actual dollar amount or staff size of projects. It was difficult to correlate size of project, type of project and other descriptive data across the three studies. These correlations would be an excellent subject for future studies.

Conversations with the original researchers and inspection of the data indicate that the managers of the largest projects appear to be in the military, then smaller sized projects in the business environment, followed by the smallest sized projects in education. It is not known if size or type of project or other such variables affected the findings. Therefore, it is possible that the discontinuity of such variables across the three environments may have had an effect on the findings.

Instruments. The data collection instruments used in the military and this study in education were developed from the instrument developed for the business study. (See Appendices A, B, and C). It is not known if the
differences in the format and the appearance of the instrument influenced responses. Even though these findings were slightly different, it is possible that the format and appearance of the instruments across the three contexts may have contributed to the differences in the findings.

The wording and format of the individual questions in the instruments may have elicited what is known as "socially desirable" answers. There is a tendency for respondents to answer questions in such a way that their answers reflect what they perceive to be the appropriate answers desired in a given data collection situation. They answer in the way that they believe is expected of them.

This perspective is especially applicable to Research Question III where the findings across the three contexts were similar. Lawrence and Lorsch (1969) developed supposedly unobtrusive aphorisms for the five conflict resolution methods that were used in the instruments in all three contexts. It is possible that the aphorisms related to the confrontation resolution method were more socially desirable than items related to Withdrawal or Forcing, particularly in the education environment. Therefore, it is possible that some of the findings may be due to the social desirability of responses.
There are environmental differences and similarities that could possibly explain the findings. The following discussion attempts to identify some of the factors differing across the education, business, and military environments.

The definition of goals in educational systems is inherently ambiguous and problematic. Goal definition for business organizations is somewhat simplified by the fact that the raw materials are inanimate objects; thus, organizational goals can be made fairly straightforward. Educational systems must deal with social norms, values, and human behavior, which necessitate goals that are ideological in character; thus, goals can become abstract and intangible. This situation is also complicated by the fact that the members of the school system, students and parents, bring their own set of values, norms, and behavior patterns to the system. Thus, the interpretation of goals varies among the groups.

Technology is a set of procedures designed to change raw materials from one form to another in a predetermined fashion. Hasenfeld and English (1974) indicate that the level of determinancy of an organization's technology depends on three variables:
a) the extent to which the desired results are tangible and well-defined;

b) the degree of stability and invariability of the raw materials;

c) the knowledge available and the degree of its completeness about cause-effect relationships in the raw materials.

These conditions are present to a greater degree in the business and military environments than in the educational environment.

Human beings are the raw materials of education systems and of some military organizations. Unlike business organizations (whose raw materials are primarily inanimate objects), education systems and some military organizations must begin with people who already have set behavioral patterns and ideas. Since the function of education is to produce behavioral change, much of the success of an education-providing organization depends on the student's (human's) willingness to change.

Staff-student relations are the core activities in education. The function of staff-student relations is to bring about change to achieve the goals of the organization. The staff member (administrator, teacher, or others) hopes to use this relationship to influence the student; in turn, the student has the opportunity to influence the staff member. The staff member must maintain distance to reduce the influence of the student on the
staff-student relationship. On the other hand, distance is sometimes not conducive to a meaningful enough relationship to achieve desired goals. As a result, the organization must monitor these relationships to ensure that organizational goals are being met. Until recently, staff evaluation has been based on the monitoring rather than on the output variable found in business and the military.

Business and military organization success can more easily be measured by tangible results (materials, profits, etc.). Education systems lack reliable and valid measures of system effectiveness. As a result, education systems tend to measure input rather than output factors to determine their effectiveness. Consequently, it may encourage organizational activities that will score well on these measures but not necessarily bring about the desired outcomes. One of these factors is that school systems are expected not to exhibit a high degree of conflictful behavior.

Education relies heavily on professional staff. Business and the military do not require as large a proportion of professional personnel. According to Hasenfeld and English (1974), the need for professional staff in human service organizations stems from two factors: a) the complexity of human problems necessitates
the use of principles based on scientific and abstract knowledge, and b) professional people who have a strong commitment to the idea of service are needed to provide human services.

Unlike business and less like the military, educational systems need to gain public acceptance. Education systems have a larger affected public. Nearly everyone has had experience with and is an output of the educational system. Parents are indirect clients of the system. Local communities provide funds for the operation of most school systems. Changes in social systems with which the education systems have ties affect the system. The education system is, therefore, more vulnerable to scrutiny from the public than business or military organizations.

Another important difference is that the education system is a nine month operation. Business, military, and most other organizations operate during the whole year. This allows educators more latitude to experiment and to mentally recharge themselves during longer off periods.

**Conflict Intensity**

Of the three environmental contexts, the education environment exerts the heaviest pressure on project directors to keep conflict in check. This is due to the
education environment's character to exhibit to the public a conducive learning environment with a low degree of classroom and organizational conflict. Pressure is also due to the emphasis to monitor, evaluate staff and to determine success on input and operational factors rather than output variables. Further educational project directors have been socialized by their training and experience not to recognize functional aspects of conflict and to suppress all conflicts.

In trying to keep conflict in check, project directors have modified the dynamics of conflict episodes. The steps in a conflict episode, shown in Figure 2 in Chapter I, are as follows:

**Antecedent conditions** (latent conflict) are the characteristics of a situation that usually lead to conflict (i.e., drives for autonomy, divergence of subunit goals, competition for scarce resources, nuances and preferences, values and beliefs), (Deutsch, 1973). However, though present they do not necessarily precipitate behavioral conflict.

**Perceived conflict** (cognitive states) is the logical and impersonal perception and awareness of the condition of a conflictful situation.

**Felt conflict** (affective states) is the personalized and emotional recognition and reaction expressed in feelings of tension, anxiety, fear, anger, hostility, threat,
mistrust and others.

Conflict behavior is the resulting conflictful action of competition, aggression, war, attack, defense, fights, debates and other such behavioral actions.

Conflict resolution is the process of settling, suppressing, or ending the conflict by a win of one party and loss or defeat of another, the partial gain and loss of all parties, the acceptable gain or loss of all parties or the delay of the situation.

Aftermath conditions are the consequences and resulting conditions from the conflict's resolution. They provide the antecedent conditions for a potentially ensuing conflict episode.

The step that project directors in education may skip or omit from the conflict episode sequence is the "conflict behavior" step. As soon as conflict is felt or perceived, project directors call meetings. The meetings are used to resolve the conflicts.

Because conflict is not allowed to advance to the manifest or behavioral stage, educational project directors may not acknowledge the level of conflict that business and military project managers perceive.

In conflict resolution, project directors in education have a greater latitude to manipulate specifications, factors, and circumstances than do their counterparts in business and military. This again may be due to the
environmental differences. In the educational environment goals are more ambiguous and abstract and can be interpreted differently by different people. The technology of the educational environment is at a lower level of determinancy than in business and military environments.

With lower levels of goal ambiguity and higher levels of technology determinancy, the business environment allows the least latitude of possible changes to reduce conflict. The military environment allows more latitude of change, and education allows the most latitude of change. This is seen as a contributing factor to the results obtained.

Education relies more heavily on professional staff than do business and the military. Professional staff usually have a strong commitment to the ideals of their profession and a responsibility toward society (Bobbitt et al., 1978). Project directors in education, therefore, are more likely to have a professional staff with their projects. If the projects are directed toward the professional ideals of the staff, the project should experience a high commitment level. With a high commitment level, personal ambitions and conflicts are submerged in a common effort, thus reducing the level of conflict. The conclusion of Chapman's (1973) study of NASA confirms the logic that with high commitment, conflicts and personal ambitions are absorbed into a common effort. Therefore, the higher level of professionalism of members
of educational projects may possibly be a contributing environmental difference that explains the findings. Because education has a more professional staff who are more readily committed, the education context should experience less conflict than business and the military.

On the other hand the expertise and autonomy aspects of professionalism may possibly influence the findings in the opposite direction. Because of their expertise, egos of professionals in the same field could precipitate conflict. Personality conflict would therefore seem to increase indicating an opposing direction. This rationale perhaps is a contributing factor to explaining the high ranking of Personality conflict in education.

The expertise and autonomy aspect of professionalism may also contribute to conflict between professionals from different fields. Because autonomy separates the fields and expertise develops its own jargon and socialization, differences yielding conflict are likely to develop. Further, Blau and Scott have identified behavioral characteristic differences between professional and bureaucratic orientations which could yield conflict (1962). Both of these prospectives indicate higher levels of conflict.

Although, the professionalism difference among the three environments does explain some of the findings, the professionalism aspect also contributes to the possible opposing perspective.
The educational system is a nine month operation while business and military organizations continue during the entire year. During the off period, educational personnel do other things. The two to three month break allows the education personnel to "psychologically re-charge" themselves. It also allows memories of conflict episodes that may have existed during the school year to erode. Some personnel in the military also have work breaks in the form of leave but they are short in duration. Business vacations are even shorter.

Although most educational projects operate during the whole year, because of the leave time project directors in education spend less time with nonstaff personnel and work with personnel who are "psychologically recharged" after their break. This would indicate that project directors should encounter less conflict with other school system personnel. Therefore, this rationale may be a contributing factor to explaining the level of intensities of conflict across the three environments. More leave time among the contexts leads to less conflict.

Background and experience of project directors in human relations and human management is different across the three contexts. Almost all education personnel must be certified to work in educational agencies. Certification requires that individuals take a course of study related to producing behavior changes in human beings. Another
requirement for certification is to have taught or to have had experience with students. In doing so, almost all project managers have acquired skills with some form of human management in their education and experience.

A lesser number of military managers have had human management education and experience because it is not expected by the environment except where training of soldiers and other personnel is required. In the business environment, even smaller numbers have had training and experience in the management of human beings. Until relatively recently, human relations has not been required in engineering programs from which many business project managers are graduated (Cook and Granger, 1975).

With more experience and education in human management, project managers in education would be more able to modify potential conflict situations and thus would perceive less conflict. This may be an additional contributing factor in explaining the results. More human relations experience and education should yield lower conflict.

An additional contributing factor to lower conflict intensity in education may possibly be that teachers are socialized to have a low tolerance for and to suppress conflict (Lortie 1975). There was some unscientific evidence from this study that supports the notion that educators have a low tolerance for and suppress conflict. Interviews with some project directors during the field
test indicated that they encounter conflict but they did not perceive it as "conflict." It appears that they have been socialized by their background and experience to not value the functional aspect of conflict, to not recognize conflict when it exists, to perceive a lower level when it is recognized and to delay or flee from manifest conflict behaviors and to move quickly to resolve it in meetings when it becomes known.

Rank Order of Overall Conflict

Environmental differences and similarities appear also to explain the rank order differences of the conflict sources among the three environments. In the business environment, conflict over Project Priorities ranked second. In the military environment conflict over Priorities ranked highest and conflict over Manpower Resources ranked second. In education, Personality conflict ranked highest and conflict over Project Priorities was ranked second.

Across all three environmental contexts, conflict over Project Priorities was either ranked first or second highest. This would indicate that conflict over Project Priorities would be a concern for most project managers and is a common element in all three environments.

Project managers in business indicated that conflict over Project Priorities frequently developed when the
parent organization had not had prior experience with a new project. Changes from the original estimates shifted Project Priorities which necessitated reallocation of critical resources, manpower, and schedules. Conflict over Project Priorities also developed with support departments which had established schedules and work patterns when project needs required changes. (Thamhain and Wilemon, 1975b).

In the military, program managers inferred that more qualified engineers and procurement specialists were assigned to work in programs with the most visibility. The problem of limited manpower resources caused problems for the lower priority programs, precipitating conflict between the program and the support departments. The major cause seems to stem from the matrix management system used to provide the proper staff for the programs (Eschmann and Lee, 1977).

The situation seems also to explain the high ranking of conflict over Manpower Resources found in the military environment. Program directors indicated that particularly at the early stage of a program phase there are a sufficient number of qualified people to fill validated requirements. The use of pooled centralized manpower resources by the Air Force matrix management system and the method for manpower resource distribution among the competing needs causes much of the conflict over Manpower
Resources. Conflict over Project Priorities and conflict over Manpower Resources in the Eschmann and Lee study seem to be tied closely together and, therefore, both rank high.

In the current study, comments written on the returned questionnaires, interviews by phone, and personal contacts indicate conflict over Project Priorities occurred in two areas. Conflict over Project Priorities was encountered with instructional delivery unit personnel due to the use of teachers and students for project purposes rather than the traditional program purposes. Conflict was also encountered when the superintendent was not committed to the project. In some cases project directors indicated that they were asked to divert efforts to other nonproject purposes that were somewhat related to the project purpose.

**Environmental Similarities.** The similarities across the three environments that may explain the results are that projects are housed in parent organizations having functional departments and higher management. Across the three environmental contexts, most conflict over Project Priorities is encountered with project work in other parent organization departments and with support by higher management of the project. Project managers of all three environments must deal effectively with both groups to achieve project objectives. In a study of project manager experience and project characteristics related to project
performance Rubin and Seelig (1976) found that the critical variable relating to success was the priority given the project. The study supports the findings that organizational priority is an important factor in managing projects.

Another common observation across the three environments was that conflict over costs and cost objectives was consistently ranked low, either sixth or seventh out of seven. It was somewhat surprising to find conflict over cost ranked consistently low. An explanation of the finding may well be that once projects become funded, most parent organizations follow established fiscal procedures. The burden of keeping financial records moves away from the project to the parent organization. Conflict over cost diminishes and becomes conflict over administrative procedures and project priorities. The standardization of financial accounting and auditing procedures is more or less universal and crosses all environmental contexts. Therefore, one would expect to find the same thing occurring in all three environments.

Conflict over Schedules. Among the conflict sources, conflict over Schedules in business ranked highest and lower in the military and education. In business, project goals are less ambiguous and technology is more determinent; therefore, project specifications are more concrete. Only small variations are allowed. Parent organizations contract the specified end product at an
established price on a schedule date. From the total price, a profit for the parent organization must be derived. This is usually not true in military and education environments.

Tremendous pressure is placed on the project managers by the parent organization to meet the delivery date without monetary penalty and to minimize cost so that profit may be maximized.

The variables of total price and end product specification are set by contract, so the only variable left to minimize cost is to reduce production costs. The rate of pay for the workers is usually established by the parent company. Because workers are paid by unit of time, project managers must reduce work time to reduce costs. To reduce work time, the project manager must manipulate schedules. The schedule manipulation causes conflict. This rationale may be an explanation of the high ranking of conflict over schedules in the business environment and lower in the others.

Many computer programs and techniques related to project scheduling have been developed and are being marketed. This provides additional evidence that scheduling is an important factor in managing projects hence leading to more conflict in the business environment.

Personality Conflict. Among the conflict sources, personality conflict ranked highest in education and ranked
sixth and seventh out of seven for the military and business contexts. Both the Evan (1965a, 1965b) and the Thamhain/Wilemon (1975a, 1975b, 1975d) studies found interpersonal conflict to be dysfunctional to project operations. Business project managers emphasized that personality conflicts were particularly difficult to handle and that intense conflicts over nonpersonal issues could be handled on a more rational basis. (Thamhain and Wilemon, 1975a)

In the previous discussion of environmental differences, the educational environment has a higher level of goal ambiguity, a lower level of technology determinancy, a higher level of monitoring and measuring input rather than outputs of the system, a higher percentage of professional staff and a higher level of public scrutiny and pressure than the business and military environments. Because of these differences, project managers in education have a greater latitude to make changes when conflict starts to occur to keep the level of conflict in check.

An explanation of the high rank of Personality conflict may be that with lower overall level of conflict and with the greater latitude for change in education projects, nonpersonal issues can be resolved more readily and rationally, thus leaving interpersonal conflict to be perceived as the most significant because of its emotional and dysfunctional nature.
Rank Order of Life Cycle Conflict

One of the two factors in the calculation of conflict measures for the life cycle phase for the business and education studies was the overall mean intensities. The conflict "measure" was developed by Thamhain and Wilemon and used in this study for comparisons between business and education. The effect of the "measure" calculation distributed the overall mean intensity across the four phases on a percentage basis.

The design of the military study was different from the business and educational studies. The overall mean intensities for the military were calculated by combining the mean intensities of conflict of each of the four life cycle phases.

For all three environments the measures of relative intensity of conflict for the four life cycle phases are directly related to the overall mean intensity of conflict. One of the discernible pattern that was identified in the ranks and trends was that for each context the ranks of conflict for each life cycle appeared to be related to the rank of the context's overall mean intensities. The variations in the overall mean intensities were discussed in the previous section along with the explanation that they were possibly due to environmental differences. Because of the interrelationship of the conflict measures to the overall mean intensities, that discussion also
Project Environment

Life Cycle Conflict. Project management and operational activities for each of the life phases across the three environments are similar. (See Discussion in Chapter I). Because of the similarity, one would expect to see trends of the measures of conflict to also show some similarity. The only trend across the four phases identified concerned the means of the measures of conflict intensity. By examining Figure 5 in Chapter II for business, Figure 9 in Chapter II for the military and Figure 15 in Chapter IV for education, it can be noted that the means were less for the last two phases than the second phase. For all three contexts the means for the main program phase were less than the means for the preparation phase. The means of the termination phase were less than the means of the main program phase. The means of the measure are indicators of the intensity of conflict during each phase.

As projects across all three contexts progress through their life cycle, many interface patterns become established. The project managers having encountered conflict early in the project life cycle have tried different resolution methods with their interfacing parties. Project managers have had opportunities to modify or eliminate conflict causing conditions and to vary the perceptions and attitudes
of interfacing parties with appropriate information. Because of their experience and the establishment of interface patterns, their perception of the intensity of conflict should be less later in the life of the project. The experience of and establishment of interface patterns by project managers may be a contributing factor to the reduction of conflict over the last two phases of the life cycle of the projects.

There is a tendency for project managers and project staff members to start focusing on their next position during the latter stages of a project. Therefore, the intensity of their involvement and concern in the project many diminish. The reduction of their involvement would tend to reduce conflict.

Further, there is a tendency among groups that are disbanding to end with a positive feeling. To foster the positive feeling project managers and staff are probably more willing to yield from their value positions. These two perspectives may also contribute to the possible explanation of the lower conflict intensity toward the end of the project.

Resolution Methods. The confrontation methods is a win-win strategy for both parties in conflict. Each of the parties seeks to satisfy their own goals as well as the goals of the others in solving their conflicts. In this way both parties win. The other strategies are win-
lose and lose-lose. Obviously, with the win-lose strategy one party wins while the other party loses. With lose-lose methods neither party accomplishes what it wants. The methods are based on the assumption that each party only gets part of what it wants and does not win or lose all and that avoidance is preferable to personal confrontation over the conflict.

If winning is preferred to losing, then logically the win-win method is best because none of the parties lose. It therefore follows that the win-win method should be the most preferred. The results from this study confirm the rationale. Studies done in other contexts also verify that the Confrontation (problem solving-consensus) method of resolving conflict is preferred over the other methods (Lawrence and Lorsch, 1967, Burke, 1970a, 1970b, Lewis and Pruitt, 1971, and Cummings et al., 1971).

Project managers across the three environmental contexts in this study also preferred by the lowest percent and rejected by the highest percent the conflict resolution methods of "forcing" and "withdrawal." The military project managers rejected "withdrawal" by the largest percent and the education project directors rejected "forcing" by the largest percent of their groups. The difference may be due to differences in the environmental values instilled in and expected of personnel in the education and military environments.
Conflict resolution modes "forcing" and "withdrawal" are win-lose and lose-lose strategies of resolution. The lowest percent preferring and the highest percent rejecting further confirms the rationale and the findings of the studies done in other fields.

Summary of Findings

Answers to Research Questions

Utilizing the null/alternative hypotheses testing method led to the rejecting of null hypotheses (no difference) for Research Questions I and II. It also led to the nonrejection of the null hypotheses for Research Question III. All three questions were answered to the affirmative by the test results.

Research Question I. Project managers in education, business and the military encounter different amounts or intensities of conflict for seven potential sources of conflict over the entire life cycle, and the rank order of the seven conflict intensities were different for the three environmental contexts.

Research Question II. The rank orders of the measures of relative intensity of conflict for the seven potential sources of conflict during each of the four life cycle phases of a project were different for project managers in education, business and the military.
**Research Question III.** The rank orders of the percent of project managers preferring and rejecting particular resolution methods in education, business and military were similar.

**Interpretation and Explanation**

The differences in the findings across the three environmental contexts of education, business and military may be due to possible measurement and methodology problems. They may also be due to differences in the environments within which project managers must work and the environmental expectations of skills and attitudes of anyone working in the environment.

Similarities in the findings may be due to measurement aspects and similarities of the project management environment across all fields.
CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS
FOR PRACTICE AND FURTHER RESEARCH

Introduction

This chapter presents the purpose and the conclusions of the study. Implications and recommendations for practice and further research are also included.

Purpose

In managing the operations of a project, project managers often encounter conflicts and disagreement. Project managers in education, business, and the military accomplish basically similar jobs, but do so in different environments. It was not known whether results of research studies of conflict conducted in business and, subsequently, in the military contexts were applicable to project management in education.

This study addressed the need for more and better knowledge. In developing this study, a review of research revealed that there were no studies of conflict in education project management environment. A lack of studies making comparisons and contrasts of project management across environmental contexts was also noted. The study
was undertaken because there were no studies of conflict in the management of projects in education, because there were environmental differences among the education, military, and business environments, and because there were few studies of project management making comparisons and contrasts among different environmental conflicts that existed.

The basic purpose of the study was to replicate in the education environment the Thamhain and Wilemon (1975a) study conducted in business environment. This study was to measure and to compare intensities of seven sources of conflict, measures of intensity of the seven sources of conflict experienced during the four project life cycle phases, and the conflict resolution methods referred or rejected by project directors in education compared to those in the military and business environment.

**Research Questions**

Because of the need for more knowledge of educational project management, three research questions guided the study.

Research Question I: Do project managers in education, business, and the military encounter different amounts or intensities of conflict for seven potential sources of conflict over entire project life cycles and do rank orders of the seven conflict intensities differ
for the three environmental contexts?

Research Question II: Do the rank order of the measures of the intensity of conflict for seven potential sources of conflict during each of the four life cycle phases of a project differ for project managers in education, business, and the military?

Research Question III: Are the rank orders of the percent of project managers preferring or rejecting particular conflict resolution methods in education, business, and the military similar?

Conclusions

On the basis of the results of the data analysis, the three research questions were answered affirmatively. The information led to three principle conclusions.

1. Project directors in education perceive lower intensities of conflict in managing their project than do military program managers; military program managers in turn perceive less conflict than do project managers in business.

This conclusion is supported by the findings from Research Question I. The differences among the three groups may be due primarily to differences in environmental contexts, the differing environmental expectations, and possible measurement and methodology problems.
2. Project managers from all three contexts as groups prefer similar methods for handling conflict when it occurs.

The findings from Research Question III support this conclusion. Studies conducted in other contexts also support the conclusion. (Lawrence and Lorsch 1967, 1969, Burke 1969, 1970a, 1970b, Lewis and Pruitt, 1971 and Cummings, et al., 1971.) Similarities among the percentage of project managers preferring and rejecting particular methods for resolving conflict may be due to similarities in the management environment and, possibly, measurement problems like social desirability responses.

3. Project managers in the education, business or military environments perceive different levels of conflict for seven sources of conflict over a project's life cycle.

This conclusion is supported by the finding from Research Questions I and II. The level of conflict was directly related to the overall conflict encountered. Differences and similarities in the overall conflict intensities may again be due primarily to the differences and similarities of the environments.

From behavior studies of the construction industry Borcherding (1976) points out that the construction industry environment is usually so different from other industries that direct application of behavioral research
findings might not be beneficial. They might possibly be detrimental to construction. This perspective tends to support the conclusion. Different conflict issues produce more conflict in one environment than in others.

**Recommendations for Practice**

The findings and conclusions suggest some implications for practice.

1. Project managers should be made aware of the relative importance of the potential conflict sources to their environments and of the relative rank of the sources during the different life cycle phases. With such awareness, they may be able to take precautions and adjust to the conditions that precipitate dysfunctional conflict. However, project managers should be made aware that although a particular conflict issue may rank low compared with other issues in a specific life cycle, it can possibly develop into severe detrimental conflict.

2. Because of the difference in conflict intensity and conflict issues, several training programs could be developed for managers in education, in business and in the military. The percentage of project managers in all environments preferring the use of conflict resolutions modes of withdrawing and forcing is very small. To effectively manage conflict, project managers must be familiar with and utilize all methods to resolve it.
Because conflict is dynamic, simulations should be developed for the training programs so that project managers may practice and refine their skills.

3. Since project managers must deal with functional departments and personnel where much of the conflict occurred, functional department personnel should also be informed and trained in project management.

**Recommendations for Further Research**

Based on the limitations, findings and conclusions of the study, the following inferences and recommendations for future research are made:

1. The measure of relative intensity of conflict for the four life cycle phases may not be a proper statistic to indicate conflict intensity. A more acceptable statistic should be identified and a calculation method developed. The data for Research Question II then should be reanalyzed to see if the results would be the same.

2. Descriptive data was gathered for this study and similar descriptive data exists from the military and business studies. The descriptive, conflict, and conflict resolution data should be correlated to determine the relationships.

3. Project managers in this study were also sampled by the Tso (1976) study. The data from both studies should
be combined so that possible longitudinal relationships may be identified and correlated.

4. The business study involved project managers in the high technology industry, the military study involved project managers in one of their programs in the Air Force, while this study surveyed project managers in the local school district setting of education. Future replication studies should be conducted in other arenas of project management application such as construction and pharmacy. In the military and government, studies should be conducted in other branches of the armed services like the Army and Navy and in the government agencies of NASA, DOE, DOT and Justice. In education, future replication studies should sample university and national R and D laboratory environments. In other human service areas, studies should be conducted with political campaigns, public safety, mental health, and the other human service delivery areas.

5. Educators tend to perceive all conflicts as dysfunctional and negative. Through organizational and socialization factors educators may perceive a distorted picture of conflict. Future research studies should be designed to explore relationships of perceived and actual views of conflict with semantic, organizational, background and socializational aspects.

6. Conflict over Budgets and Costs ranked relatively low in all three environments. Future research studies
should be designed to explore relationships of project management procedures and policies of procurement, accounting, supply and other money related factors to the lower level of conflict over Costs and Budgets.

7. The three studies were based on project management models rather than directly on a conflict model. A group of future research studies should be conducted having a design based on conflict models and theory involving the dynamic aspect of conflict, particularly the manifest behavior and resolution of conflict.
APPENDIX A

Data Collection Instrument

for Education
AN INVESTIGATION OF THE
SOURCES OF CONFLICT AND THEIR RESOLUTION
IN THE MANAGEMENT OF EDUCATIONAL PROJECTS

prepared by
Desmond L. Cook
Peter A. Stoycheff

Educational Program Management Center
Faculty of Educational Development
College of Education
The Ohio State University
AN INVESTIGATION OF THE  
SOURCES OF CONFLICT AND THEIR RESOLUTION  
IN THE MANAGEMENT OF EDUCATIONAL PROJECTS  

The questions presented are directed toward your experience as a project director on a completed externally funded educational project. The questions are grouped into two sections:  

Section I: Educational project management conditions.  
Section II: Sources of conflict and their resolution.  

Please respond to only Section I if your project has not yet been completed.  

If you have difficulty in responding to any of the items as it is worded, please still answer it the best way you can. Space is provided at the end of the questionnaire for your comments.  

Your cooperation in this study will be deeply appreciated.  

Section I: Educational Project Management Conditions  

This section contains items related to the description of the project, the relationship of the project to the parent organization, your relationship with the project, and your background and experience.  

A. For each of the following please complete the blank box.  

1. What percentage of total project task work was accomplished  
   a. by your own effort ................................... %  
   b. by project subordinates ................................ %  
   c. by personnel assigned to the project from other functional groups ................................ %  
   d. by other functional support departments over which you may have little or no direct control ................................ %  

   100 %
2. Which of the organizational structures presented below describes your work environment best?

Definition:
Functional Department or Organization: A unit or part of a total organization with either normal or special characteristic actions contributing to the total organizational effort (e.g., the purchasing, accounting, personnel, evaluation, and instructional delivery units of a school system).
3. What was the average annual number of FTE (full-time equivalent) personnel involved with the task work of your project?

4. What was the average annual budget for the project? (To the nearest thousand dollars)

5. For how many years was your project funded?

6. How long was the project under your responsibility?

7. What was the percentage of your time allocated to the project?

8. What year was your project completed? (Funds terminated)

9. Who was your immediate supervisor?
   - Superintendent
   - Assistant or Associate Superintendent
   - Central Office Staff (e.g., Supervisors, etc.)
   - Principal
   - Other (please specify):

10. What was the primary emphasis of the project?
    - Design
    - Development
    - Evaluation
    - Dissemination
    - Adoption
    - Other (please specify):
C. For each of the following please complete the blank box. Where a choice is given please check the box which best applies.

(Personal Data will be treated strictly proprietarily and used only in aggregated form.)

11. Sex □ Male □ Female

12. Present Age __________

13. Level of education at time of leaving the project
   □ Bachelor's
   □ Master's
   □ Doctorate
   □ Other (please specify):

14. How much formal training or education in human relations (i.e., leadership, group dynamics, communication, etc.) have you had?
   □ No formal training
   □ 2 Semester/quarter courses
   □ Short-term (average one week) courses or workshops
   □ 3 or more semester/quarter courses
   □ 1 Semester/quarter course

15. At the start of your project how many projects had you managed? __________

16. At the start of your project how many years of project management experience did you have? __________

17. At the start of your project for how many different school systems had you worked? __________

18. Are you now engaged in project management work?
   □ Yes □ No Please describe your present position
Section II: Sources of

This section contains items and grids related to determining the type of mode used to handle or resolve them.

You may wish to refer to the definition of terms in completing this.

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Conflict Over Project Priorities</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Conflict Over Administrative Procedures</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Conflict Over Technical, Conceptual, and Performance Specifications</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Conflict Over Manpower Resources</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Conflict Over Cost, Cost Objectives, and Budget</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Conflict Over Schedules</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>

1. What are the major Causes of Conflict and Disagreement in your work environment?

(Please indicate the relative magnitude by a mark or check in the appropriate columns provided in the table below).

<table>
<thead>
<tr>
<th>Personality Conflicts</th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Departments That Do Work for Your Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little or No Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Some Conflict</td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
</tr>
<tr>
<td></td>
<td>Considerable Conflict</td>
<td>Great Conflict</td>
<td></td>
</tr>
</tbody>
</table>
Conflict and Their Resolution

Identify the sources and extent of conflict and disagreements that were encountered and the related situations.

<table>
<thead>
<tr>
<th>WITH YOUR SUPERIOR</th>
<th>CONFLICT BETWEEN YOUR TEAM MEMBERS</th>
<th>WITH YOUR OUTSIDE FUNDING AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LITTLE OR NO CONFLICT</td>
<td>SOME CONFLICT</td>
<td>MODERATE CONFLICT</td>
</tr>
<tr>
<td></td>
<td>LITTLE OR NO CONFLICT</td>
<td>SOME CONFLICT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Go to next page
2. Over the lifetime of a project, where in time would you say most of the conflict occurs for each of the sources listed on the left? (Please indicate with a mark or check in the appropriate box or boxes.)

<table>
<thead>
<tr>
<th>Conflicts</th>
<th>Project Start</th>
<th>Program Phase</th>
<th>Main Program</th>
<th>Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Priorities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical, Conceptual, and Performance Specifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manpower Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost, Cost Objectives and Budget</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schedule</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personality Conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. From your own experience, would you agree or disagree with the following statements? (Please indicate the relative magnitude from 0 to 5 by a mark or check of the appropriate scales on each of the scales in the grid below.)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral or Mixed Feelings</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The introduction of an externally funded project into a functional organization (e.g., school district) will likely cause conflict and disagreement within the functional organization.</td>
<td>0 (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The greater the diversity of expertise among the participants of a project team, the greater the potential for conflict and disagreement.</td>
<td>0 (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The lower the project director's power of reward and punishment, the greater the potential for conflict and disagreement to develop.</td>
<td>0 (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The lower the specific objectives of a project are understood by project team members, the more likely that conflict and disagreement will develop.</td>
<td>0 (10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. The greater the ambiguity of roles among participants of a project team, the more likely that conflict and disagreement will develop.</td>
<td>0 (18)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The greater the agreement on top management goals for the project, the lower the potential for detrimental conflict and disagreement on the project level.</td>
<td>0 (14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. The lower the project director's formal authority over subordinates, the more likely that conflict and disagreement will occur.</td>
<td>0 (22)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The more members of a functional area perceive that the implementation of a project will adversely affect their traditional organizational roles, the greater the potential for conflict and disagreement.</td>
<td>0 (26)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DO NOT WRITE IN THIS SPACE

1. (1)  2. (4)  3. (7)  4. (10)  5. (18)  6. (22)  7. (26)  8. (29)
4. Overall, when you take into account the goals you started with and the resources you had, about what percentage of the project's goals would you say were achieved? 

5. Listed below are 15 proverbs representing folk wisdom about methods of handling conflict.

Please use the following scores in evaluating the accuracy at which each proverb describes the actual way you resolved conflicts. Circle or cross out the appropriate number in the grid below.

1. Very accurate in most situations
2. Accurate in some situations
3. Accurate only in very few situations
4. Not accurate at all

<table>
<thead>
<tr>
<th>Proverb</th>
<th>Score Between You and Your Project Personnel</th>
<th>Score Between You and Your Supervisor</th>
<th>Score Between You and Functional Support Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Might Overcomes Right</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>Better Half a Loaf than No Bread</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>Come Now and Let Us Reason Together</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>The Arguments of the Strongest Always Have the Most Weight</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>When Two Quarrel He Who Keeps Silence First is the Most Praiseworthy</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>If You Cannot Make a Man Think as You Do, Make Him Do as You Think</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>When One Hits You with a Stone, Hit Him with a Piece of Cotton</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>By Digging and Digging the Truth is Discovered</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>Kill Your Enemies with Kindness</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>You Scratch My Back, I'll Scratch Yours</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>He Who Runs Away Lives to Run Another Day</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>It is Easier to Refrain Than to Retreat from a Quarrel</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>Soft Words Win Hard Hearts</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>Don't Stir up a Hornet Nest</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
<tr>
<td>A Man Who Will Not Flee Will Make His Foe Flee</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
<td>1    2    3    4</td>
</tr>
</tbody>
</table>
6. Considering everything, how do you feel about the success of your project?

NOT SUCCESSFUL

AT ALL

VERY SUCCESSFUL

Comments:

(Please make any of your comments related to the study here.)
☐ Check the box if you wish to receive a copy of the summary report.

Address for the report

____________________________________

____________________________________

11
APPENDIX B

Data Collection Instrument

for Business
CONFLICT IN PROJECT MANAGEMENT

QUESTIONNAIRE

1. Which organizational structure describes your work environment best?

□ UMW

□ MCT

□ IMU

□ MCT

□ MMCT

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

□ MCTR

2. What percentage of your project task is accomplished
   (a) by your subordinates ............................ %
   (b) by assigned project personnel from other functional groups .............. %
   (c) by other functional support departments over which you may have little or no direct control . . . %

   100 %

3. What are the areas and magnitudes of your responsibility as project manager?

<table>
<thead>
<tr>
<th>AREAS OF YOUR RESPONSIBILITY</th>
<th>PROPOSAL</th>
<th>R&amp;D</th>
<th>ADVANCED DESIGN</th>
<th>ENGINEERING</th>
<th>MANUFACTURING</th>
<th>INSTALLATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT MAGNITUDE (ANNUAL EXPENDITURE)</td>
<td>$5k</td>
<td>$50k</td>
<td>$1M</td>
<td>$50M</td>
<td>&gt;$1M</td>
<td></td>
</tr>
<tr>
<td>PROJECT DURATION UNDER YOUR RESPONSIBILITY</td>
<td>&lt; 1 MONTH</td>
<td>&lt; 6 MONTHS</td>
<td>&lt; 1 YEAR</td>
<td>&lt; 2 YEARS</td>
<td>&gt; 2 YEARS</td>
<td></td>
</tr>
</tbody>
</table>

4. Why, in your opinion, do
   - your subordinates (S)
   - other personnel who support your project (P)
comply with your orders and recommendations?

   (Rank in order of importance those reasons that you feel apply.
   Use "1" for most important reason, etc.)

<table>
<thead>
<tr>
<th>(S)</th>
<th>(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUR SUBORDINATES</td>
<td>OTHER PROJECT PERSONNEL</td>
</tr>
</tbody>
</table>

   - THE FEEL YOU HAVE THE FORMAL AUTHORITY
   - THEY FEEL YOU CAN INFLUENCE THEIR SALARY ADJUSTMENTS
   - THEY ARE INTERESTED IN THIS TYPE OF WORK AND SEE IT AS PROFESSIONALLY CHALLENGING
   - THEY FEEL YOU CAN INFLUENCE FUTURE WORK ASSIGNMENTS
   - THEY FEEL YOU CAN INFLUENCE THEIR PROMOTION
   - THEY FEEL YOU CAN INFLUENCE FUND ALLOCATION
   - YOU HAVE ESTABLISHED PERSONAL FRIENDSHIP WITH THEM
   - BECAUSE THEY RESPECT AND PLACE CONFIDENCE IN YOUR SPECIAL KNOWLEDGE AND ADVICE
   - THEY FEEL YOU CAN DO SOMETHING TO PENALIZE OR HURT THEM IN SOME WAY
5. What are the major Causes of Conflict in your work environment?

(Please indicate the relative magnitude by a check mark in the columns provided)

<table>
<thead>
<tr>
<th></th>
<th>With Your Subordinates</th>
<th>With Assigned Project Personnel</th>
<th>With Functional Requirements That Do Not Work for Your Project</th>
<th>With Your Superior</th>
<th>Interpersonal Conflict Between Your Team Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict Over Project Priorities</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4 7</td>
<td>4 3 2 1</td>
</tr>
<tr>
<td>Conflict Over Administrative Procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Technical Opinions and Performance Tradeoffs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Manpower Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Cost Objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Schedules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personality Conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Over the lifetime of a project, where in time would you say most of the conflict occurs?

<table>
<thead>
<tr>
<th>Project Start</th>
<th>At the Project Formation</th>
<th>At the Early Program Phases (Project Buildup)</th>
<th>During the Main Program Period</th>
<th>Toward the End of the Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict Over Project Priorities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Administrative Procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Technical Opinions and Performance Tradeoffs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Manpower Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Cost Objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Over Schedules</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personality Conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. When a serious problem or conflict arises, can the individual(s) involved take the matter up with someone at a higher level of management if the problem appears dissatisfactory handled by the project superior?

<table>
<thead>
<tr>
<th>IS THERE A FORMAL APPEAL SYSTEM?</th>
<th>IS THERE AN INFORMAL WAY TO APPEAL?</th>
<th>DO YOU FEEL THAT THE EXISTING METHODS ARE EFFECTIVE IN RESOLVING CONFLICT?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| FOR CONFLICT BETWEEN YOU AND YOUR PERSONNEL |                                     |                                                                          |
|                                          |                                     |                                                                          |

| FOR CONFLICT BETWEEN YOU AND YOUR SUPERIOR |                                     |                                                                          |
|                                          |                                     |                                                                          |

| FOR CONFLICT BETWEEN YOUR PROJECT ORGANIZATION AND OTHER DEPARTMENTS |                                     |                                                                          |
|                                                                         |                                     |                                                                          |

8. Do you feel that the opportunity to appeal a "conflict ruling" will benefit overall project efficiency?

<table>
<thead>
<tr>
<th>IN GENERAL, PROJECT EFFICIENCY</th>
<th>.... WILL INCREASE</th>
<th>.... WILL DECREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| FOR CONFLICT BETWEEN YOU AND YOUR PERSONNEL | .... WILL INCREASE | .... WILL DECREASE |
|                                           |                    |                    |

| FOR CONFLICT BETWEEN YOU AND YOUR SUPERIOR | .... WILL INCREASE | .... WILL DECREASE |
|                                          |                    |                    |

| FOR CONFLICT BETWEEN YOUR PROJECT ORGANIZATION AND OTHER DEPARTMENTS | .... WILL INCREASE | .... WILL DECREASE |
|                                                                      |                    |                    |

9. Your Personal Data (Will be treated strictly proprietary and used only in aggregate form)

<table>
<thead>
<tr>
<th>AGE</th>
<th>- 25 - 30 - 35 - 40 - 45 - 50 - 55 - 60 -</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT MANAGEMENT EXPERIENCE</td>
<td>* 1 * 2 * 3 * 4</td>
</tr>
<tr>
<td>TYPE OF EDUCATION (i.e. degree)</td>
<td></td>
</tr>
<tr>
<td>HOW MANY FIRMS DID YOU WORK FOR? (Including present firm)</td>
<td></td>
</tr>
<tr>
<td>KIND OF JOB, MOST WORK IN PRESENT JOB? (i.e. R&amp;D, Computer Systems, Radar, Contractor, etc.)</td>
<td></td>
</tr>
</tbody>
</table>
10. "A project-organized work environment is more susceptible to conflict than functional organizations."

Does your work experience confirm this statement?

YES _____ NO _____

11. The list of 15 proverbs represents folk wisdom about methods of handling conflict.

Please use the following scores in evaluating the accuracy at which each proverb describes the actual way you resolve conflict:

1) Very accurate in most situations
2) Accurate in some situations
3) Accurate only in very few situations
4) Not accurate at all

<table>
<thead>
<tr>
<th>HOW ACCURATELY DOES THE PROVERB DESCRIBE THE WAY YOU RESOLVE CONFLICT?</th>
<th>BETWEEN YOU AND YOUR PROJECT PERSONNEL?</th>
<th>BETWEEN YOU AND YOUR SUPERIOR?</th>
<th>BETWEEN YOU AND FUNCTIONAL SUPPORT DEPARTMENTS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night overcomes right</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better half a loaf than no bread</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Come now and let us reason together</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The arguments of the strongest always have the most weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When two quarrel he who keeps silence first is the most praiseworthy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you cannot make a man think as you do, make him do as you think</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When one hits you with a stone, hit him with a piece of cotton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By digging and digging the truth is discovered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kill your enemies with kindness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You scratch my back, I'll scratch yours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>He who runs away lives to run another day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easier to refrain than to retreat from a quarrel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft words win hard hearts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't stir up a hornet nest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A man who will not flee will make his foe flee</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

Data Collection Instrument

for the Military
CONFLICT IN PROGRAM MANAGEMENT
QUESTIONNAIRE

USAF SCN 77-90 (Expires 30 September 1977)
PRIVACY STATEMENT

In accordance with paragraph 70, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations, and/or

(2) 10 U.S.C. 802, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.
CONFLICT IN PROGRAM MANAGEMENT

QUESTIONNAIRE

1. Name of Program: ______________ Age of Program: ___yr._ ___mo.
2. Military Rank or Civilian Grade: ______________
3. Age: _______ years
4. Program Management Experience: ____ years _____ months
5. How many system acquisition programs have you worked with? ____
6. Education (circle one): HS AA BS MBA MS DEA PhD
7. Organizational Level. Place a checkmark in the box that best corresponds to the level of your duty assignment.

8. Consider the following two statements. After reading them place a checkmark in the box below that best indicates the extent to which your primary duties are described by one of the definitions or a combination of the definitions.

Manager I is a manager involved in dealing with other agencies outside of his formal authority (chain of command). He relies a great deal on horizontal and diagonal relationships in an effort to monitor and control the cost, schedule, and performance parameters of a program/project. Horizontal/diagonal relationships refers to cutting across other lines of authority on the organizational chart.
Manager II is defined as a manager involved in managing his on-going activities in a well-defined functional area relying primarily on a strict vertical chain of command relationship.

Manager I        Manager II
Totally 50-50  Totally
Horizontal  Vertical
Diagonal   Relationships

9. What percentage of your program tasks are accomplished . . .
   a. by yourself or subordinates directly assigned to
      your section ............................................
   b. by program personnel assigned to your SIC from
      other functional groups ...............................
   c. by other functional support departments over which
      you may have little or no control ....................

10. From your own experience, would you agree or disagree with
    the following statements? Write a number in the blank for
    each statement, based on this scale:

    (1) Strongly disagree
    (2) Disagree
    (3) Neutral or mixed feelings
    (4) Agree
    (5) Strongly agree

    a. The greater the diversity of expertise among the partic-
       ipants of a program, the greater the potential for conflict.

    b. The lower the program manager's power of reward and punish-
       ment, the greater the potential for conflict to develop.

    c. The less the specific objectives of a project are under-
       stood by program members, the more likely that conflict will
       develop.

    d. The greater the ambiguity of roles among participants in
       a program, the more likely that conflict will develop.

    e. The greater the agreement on top management goals, the
       lower the potential for detrimental conflict on the program
       level.

    f. The lower the program manager's formal authority over sup-
       porting organizational units, the more likely conflict will
       occur.
11. What are the major Causes of Conflict in your work environment?

Indicate the relative magnitude by a checkmark in the columns provided. Definitions of the terms used are provided on the following pages. The numbers in each column represent the intensity of conflict as follows:

1. No conflict
2. Some conflict
3. Considerable conflict
4. Great conflict

<table>
<thead>
<tr>
<th>Conflict over Program Priorities</th>
<th>With Your Subordinates</th>
<th>With Assigned Program Personnel</th>
<th>With Functional Departments</th>
<th>With Your Superior</th>
<th>With Other SPC Members</th>
<th>With Outside Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Conflict over Administrative Procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict over Technical Opinions and Performance Tradeoffs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict over Manpower Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict over Cost Objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict over Schedules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personality Conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Definitions for Question #11

(A) VERTICAL AXIS - 7 POTENTIAL CONFLICT SOURCES

CONFLICT OVER PROGRAM PRIORITIES. The views of program participants often differ over the sequence of activities and tasks which should be undertaken to achieve successful program completion. Conflict over priorities may occur not only between the SPO and other support groups, but also within the SPO itself.

CONFLICT OVER ADMINISTRATIVE PROCEDURES. A number of managerial and administrative-oriented conflicts may develop over how the program will be managed, i.e., the definition of the program manager's reporting relationships, operational requirement, scope, definition of responsibilities, interface relationships, negotiated work agreements with other groups, and procedures for administrative support.

CONFLICT OVER TECHNICAL OPINIONS AND PERFORMANCE TRADEOFFS. Disagreements may arise over technical issues, performance specifications, technical tradeoffs, and the means to achieve technical performance.

CONFLICT OVER MANPOWER RESOURCES. Conflicts may arise around the staffing of the program with personnel from other functional and staff support areas or from the desire to use another department's personnel for program support even though the personnel remain under the authority of their functional superiors.

CONFLICT OVER COST. Conflict may develop over cost estimates from support areas regarding various program work breakdown packages.

CONFLICT OVER SCHEDULES. Disagreements may develop around the timing, sequencing, and scheduling of project related tasks.

PERSONALITY CONFLICT. Disagreements may tend to center on interpersonal differences rather than on "technical issues". Conflicts are often "ego-centered".

(B) HORIZONTAL AXIS - 6 INTERFACING GROUPS WHERE CONFLICT MAY OCCUR

SUBORDINATES. Personnel that are directly assigned to the program and working under the supervision of the program manager.

ASSIGNED PROGRAM PERSONNEL. Personnel from the functional departments who are temporarily assigned to the program on a "loaned" basis.

FUNCTIONAL DEPARTMENTS. In an organization these are the specialized departments from which the program manager must obtain support for his program, i.e., the engineering office and the procurement office.
SUPERIORS. This refers to the personnel to whom the program manager is immediately responsible.

OTHER SPO MEMBERS. These personnel are the other program team members assigned to a SPO. In a Super-SPO, this may refer to the various subsystem program managers who must work together to deliver a final product. In the smaller SPO's, this may refer to other program managers on the same organizational level upon which a program manager may have to depend on for his own program's objectives.

OUTSIDE AGENCIES. This will include such outside influences such as AFSC Headquarters, the user commands, the Inspector General teams, and the host of outside Air Force agencies that continually interface with ASD program managers.

12. Indicate the current phase of system acquisition for your Program. If aspects of your program cover several phases, indicate below the phase in which the majority of the tasks fall.

<table>
<thead>
<tr>
<th>Conceptual</th>
<th>Production</th>
<th>Full-Scale Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Relating to your own experience, where in time would you say most of the conflict occurs over the lifetime of a program? Please indicate by check in appropriate column for each category of conflict. (Only one checkmark per row)

<table>
<thead>
<tr>
<th>CONCEPTUAL VALIDATION FULL-SCALE DEVELOPMENT PRODUCTION DEPLOYMENT ALMOST EQUAL IN ALL PERIODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict over Program Priorities</td>
</tr>
<tr>
<td>Conflict over Administrative Procedures</td>
</tr>
<tr>
<td>Conflict over Technical Opinions and performance trade-offs</td>
</tr>
<tr>
<td>Conflict over Manpower Resources</td>
</tr>
<tr>
<td>Conflict over Cost Objectives</td>
</tr>
<tr>
<td>Conflict over Schedules</td>
</tr>
<tr>
<td>Personality Conflict</td>
</tr>
</tbody>
</table>
The list of 15 proverbs represents folk wisdom about methods of handling conflict. Use the following scores in evaluating the accuracy at which each proverb describes the actual way you resolve conflict.

(1) Very accurate in most situations  
(2) Accurate in some situations  
(3) Accurate only in very few situations  
(4) Not accurate at all

<table>
<thead>
<tr>
<th>Proverb</th>
<th>How Accurately Does the Proverb Describe the Way You Resolve Conflict...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better half a loaf of bread than no bread</td>
<td></td>
</tr>
<tr>
<td>Right overcomes right</td>
<td></td>
</tr>
<tr>
<td>Come now and let us reason together</td>
<td></td>
</tr>
<tr>
<td>The arguments of the stronger always have the most weight</td>
<td></td>
</tr>
<tr>
<td>When two quarrel he who keeps silent first is the most praise worthy</td>
<td></td>
</tr>
<tr>
<td>If you cannot make a man think as you do, make him do as you think</td>
<td></td>
</tr>
<tr>
<td>When one hits you with a stone, hit him with a piece of cotton</td>
<td></td>
</tr>
<tr>
<td>By digging and digging the truth is discovered</td>
<td></td>
</tr>
<tr>
<td>Kill your enemies with kindness</td>
<td></td>
</tr>
<tr>
<td>You scratch my back, I'll scratch yours</td>
<td></td>
</tr>
<tr>
<td>He who runs away lives to run another day</td>
<td></td>
</tr>
<tr>
<td>It is easier to refrain than to retreat from a quarrel</td>
<td></td>
</tr>
<tr>
<td>Soft words win hard hearts</td>
<td></td>
</tr>
<tr>
<td>Don't stir up a hornet's nest</td>
<td></td>
</tr>
<tr>
<td>A man who will not flee will make his foe flee</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

Definitions of Terms
Definitions of Terms Used in the Study

Please review the definition of terms before you start Section II.

For the purpose of this study the following terms are defined:

**Project** — A once-through, goal oriented effort of interrelated tasks conducted under uncertainty by a temporary organization or system to meet stated performance specifications within schedule and budget specifications. A project may or may not become an on-going program of the organization.

**Functional Department or Organization** — A unit or part of a total organization with either normal or special characteristic actions contributing to the total organizational effort (e.g., the purchasing, accounting, personnel, evaluation and instructional delivery units of a school system.)

**Conflict** — The behavior of an individual, a group or an organization concerning differences of viewpoint, which impedes or restricts (at least temporarily) the attainment of project goals. Although conflict may impede the attainment of one’s goals, the consequences may be beneficial if it produces new information which in turn, enhances the decision making process. Therefore, conflict can be functional or dysfunctional.

**Project Priorities** — The emphasis or importance placed (a) upon the project by the organization or (b) on the particular aspects or objectives of the project while others are attributed less importance or emphasis by the organization or other persons.

**Administrative Procedures** — The organizationally established means or methods for dealing with a process or directing courses of action (i.e., the definition of the project director’s reporting relationships, definition of responsibilities or job descriptions, operational requirements, plan of execution, procedures for purchasing, accounting, and personnel).

**Technical, Conceptual and Performance Specifications** — The quality and quantity dimension of the designated end product (materials, services, behavioral particulars, etc.) described in the project objectives (sometimes not fully) and their criteria for achievement.

**Manpower Resources** — The availability and utilization of both school district personnel to do project work and the hiring, orienting, training and assigning of personnel to staff the project.

**Cost, Cost Objectives and Budget** — The dollar amount paid or to be paid for specified goods or services identified in an initial accounting document including any subsequent re-budgeting due to project progress.

**Schedule** — An initial calendar of specified dates for completion of individual tasks and the total project including any subsequent re-scheduling due to project progress.

**Personality Conflict** — Conflicts over interpersonal or personal value differences.
DEFINITION OF TERMS

The following terms are defined for the purpose of this study:

PLANNING PHASE - The first stage or time-activity period in the life of a project which involves establishing project objectives, defining and evaluating alternative courses of action, and selecting the course which should most effectively and efficiently achieve the established objectives and which involves creating a written document for guiding future project activities.

PREPARATION PHASE - The second stage or time-activity period in the life of a project which involves the initiating or start-up activities of obtaining personnel, facilities, equipment, materials, and information and which involves organizing these elements into a unified whole.

OPERATION PHASE - The third and main stage or time-activity period in the life of a project which involves the actual conduct of the activities or work specified in the written project plan.

TERMINATION PHASE - The fourth and final stage or time-activity period in the life of a project which involves the activities dealing with ending the project on or near the scheduled completion date.

PROJECT MANAGEMENT - The process of uniquely utilizing aspects of the four general management functions of planning, organizing, controlling and directing to the operating of a project.

PROJECT MANAGER - The single person responsible for the operation of the project and the achievement of the project goals within performance, time and cost specifications.

PARENT ORGANIZATION - The permanent organization within which projects are housed.

ESEA TITLE III PROGRAM - Federal legislation providing funding for supplementary centers and services with the purpose of stimulating and providing education services which were not available in sufficient quality or quantity, with the purpose of stimulating and aiding in the creation of exemplary elementary and secondary program elements to service as models for school systems.
APPENDIX E

Initial Mailing

Cover Letters
Dear Project Director:

The Educational Program Management Center (EPMC) of The Ohio State University is involved in the continuous study of the theory and practice of managing and directing projects in the educational setting. The Center has developed a conceptual framework or model for the study of educational project management and currently is determining the validity of the model.

During the summer of 1975, you were invited to participate in a study of ESEA projects concerning the use of planning and controlling techniques by educational project directors. Your participation is again being requested for this current study.

The purpose of this specific investigation is to draw upon the expertise of educational project directors like yourself (1) to categorize and rate sources, types and intensity of conflicts and disagreements with different people encountered in managing your projects and (2) to identify the resolution methods utilized by project directors in resolving conflict. The findings of this investigation will be compared to the findings of similar studies conducted in business and industry to identify any differences and similarities. The findings will also be used in verifying the theoretical model and providing future guidelines for more effective project management in local school system settings.

Your cooperation in completing the enclosed instrument and returning it in the enclosed envelope will be greatly appreciated. The instrument can be completed in 30 minutes. Your responses will be treated strictly confidential.

We will be pleased to send you a summary of the survey. If you desire the summary, check the appropriate location on the instrument.

Sincerely,

Desmond L. Cook
Director

College of Education
Dear Project Director:

The Educational Program Management Center (EPMC) of The Ohio State University is involved in the continuous study of the theory and practice of managing and directing projects in the educational setting. The Center has developed a conceptual framework or model for the study of educational project management and currently is determining the validity of the model.

Our records show that your ESEA Title III project was in operation during the summer of 1975 and should be completed at this time. As a former project director, your participation is being requested for this current study.

The purpose of this specific investigation is to draw upon the expertise of educational project directors like yourself (1) to categorize and rate sources, types and intensity of conflicts and disagreements with different people encountered in managing your project and (2) to identify the resolution methods utilized by project directors in resolving conflict. The findings of this investigation will be compared to the findings of similar studies conducted in business and industry to identify any differences and similarities. The findings will also be used in verifying the theoretical model and providing future guidelines for more effective project management in local school system settings.

Your cooperation in completing the enclosed instrument and returning it will be greatly appreciated. The instrument can be completed in 30 minutes. A self-addressed, stamped return-envelope is enclosed for your convenience. Your responses will be treated in total confidence.

We will be pleased to send you a summary of the survey. Should you desire the summary, check the appropriate location on the instrument. If you have any questions, please write or call Peter A. Staycheff collect at (614) 881-4494 or 881-5863.

Sincerely,

Desmond L. Cook
Director

College of Education
APPENDIX F

First Follow-up Letter
Dear Project Director:

Your cooperation is needed!!

The Educational Program Management Center is conducting an investigation of the sources and intensity of conflict and conflict resolution methods in the management of projects. You were included in the study because of your involvement in previous research on ESEA Title III projects.

Early in November, a pink questionnaire was forwarded to your last known address. As of this date, we have not received the completed data form. Due to the nature of the study design, your response is especially critical.

Please take a few minutes to complete and return the form before the first of the year. If you have already completed and returned the form, please accept our thanks.

The best to you and yours in this holiday season and new year.

Sincerely,

Desmond L. Cook, Director

P.S. If you have not received the pink questionnaire, call Peter A. Stoycheff collect at (614) 881-4494.
APPENDIX G

Second Follow-up

Cover Letter
March 1, 1978

Dear Project Director:

Your help is needed!!

The Educational Program Management Center is conducting an investigation of conflict sources and conflict resolution methods in managing educational projects. Your experience and expertise as a project director of a completed ESEA Title III project is urgently needed.

Early in November and in December the Center forwarded a questionnaire to your last known address. As of this date your completed instrument has not been received. Due to the survey design and the small sample from each state, your particular response is especially critical.

The information from your response will aid to provide future guidelines for more effective project management in local school system settings. Please take a few minutes to complete the enclosed instrument. The instrument can be completed in thirty minutes. For your convenience a self-addressed, stamped return-envelope is enclosed. Your responses will be treated in total confidence.

If your project has been completed or is in its dissemination phase, please respond to both Section I and II of the instrument; if not, respond to Section I only. If you have completed and returned the previous instrument, please make a note on the enclosed instrument with the approximate mailing date and return it. We have lost some forms in the mail. If you have any questions, please write or call Peter A. Stoycheff collect at (614) 881-4494 or 881-5863.

Returning your completed instrument promptly will be deeply appreciated. A summary of the survey will be developed and a copy will be sent to you if you check the appropriate location on the instrument.

Sincerely,

Desmond L. Cook
Director

College of Education
APPENDIX H

Third Follow-up Letter
April 3, 1978

Dear Project Director:

Help!

Your help is urgently needed!!

Early in March the Educational Program Management Center forwarded a second pink questionnaire to you related to the investigation of the sources of conflict and their resolution in the management of educational projects. As of this date your completed instrument has not been received. Due to the survey design and the small sample size for your state, your particular response is extremely critical.

Please take a few minutes to complete and return the pink questionnaire at your earliest convenience. The information from your response will aid in providing future guidelines for more effective project management in local school settings.

If you have any questions, please write or call Peter A. Stoycheff collect at (614) 881-4494 or 881-5863.

Sincerely,

Desmond L. Cook
Director

College of Education
APPENDIX I

Humorous Follow-up Mailings
Educational Project Directors

We've fallen behind!

The completion and return rate for the pink questionnaire for project managers in education is less than it was for project managers in business and industry.

I told Dr. Cook we would come through.

Come on team, let's go.

Complete those questionnaires.

Peter Stoycheff, Res. Assoc.
OSU-EPMC (614) 881-4494

---

Educational Project Director

Are future project directors going to be sad?

Well! How about it!!!

Complete that pink questionnaire.

Peter Stoycheff
(614) 881-4494
Third Mailing

Educational Project Director

We're STILL in the RED.

Think PINK!

Return that questionnaire.
APPENDIX J

Additional Military Data
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>TYPE PROGRAM MANAGER</th>
<th>KENDALL TAU</th>
<th>PROBABILITY OF OCCURRENCE UNDER $H_0$</th>
<th>$\alpha = .05$</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>CIVILIAN &amp; SPO MANAGER</td>
<td>.33</td>
<td>.15</td>
<td>X</td>
</tr>
<tr>
<td>II</td>
<td>CIVILIAN &amp; SPO MANAGER</td>
<td>.48</td>
<td>.06</td>
<td>X</td>
</tr>
<tr>
<td>III</td>
<td>CIVILIAN &amp; SPO MANAGER</td>
<td>.10</td>
<td>.38</td>
<td>X</td>
</tr>
<tr>
<td>IV</td>
<td>CIVILIAN &amp; SPO MANAGER</td>
<td>-.24</td>
<td>.23</td>
<td>X</td>
</tr>
</tbody>
</table>

1Category refers to life-cycle phases/stages described on page 44.

TABLE 19

Mean Intensities of Conflict Sources with Interfacing Parties of Business and Military Projects

<table>
<thead>
<tr>
<th>SOURCES OF CONFLICT</th>
<th>SUBORDINATES</th>
<th>INTERFACING GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUB</td>
<td>TH MEAN</td>
</tr>
<tr>
<td></td>
<td>TH</td>
<td>AF</td>
</tr>
<tr>
<td>PRIORITIES</td>
<td>.7</td>
<td>.387</td>
</tr>
<tr>
<td>ADMINISTRATIVE</td>
<td>1.0</td>
<td>.309</td>
</tr>
<tr>
<td>TECHNICAL</td>
<td>1.1</td>
<td>.353</td>
</tr>
<tr>
<td>MANPOWER</td>
<td>.9</td>
<td>.228</td>
</tr>
<tr>
<td>COST</td>
<td>.6</td>
<td>.162</td>
</tr>
<tr>
<td>SCHEDULES</td>
<td>1.1</td>
<td>.257</td>
</tr>
<tr>
<td>PERSONALITY</td>
<td>1.1</td>
<td>.109</td>
</tr>
</tbody>
</table>

1Thamhain and Wilemon means were taken from Figure 9, p. 79.
2AF means (STDEV) or Air Force means and standard deviations were calculated from a sample of 136.

Figure 10. Conflict Intensity Profile of Interfacing Groups in Category I.

<table>
<thead>
<tr>
<th>SOURCES OF CONFLICT</th>
<th>CONFLICT INTENSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIORITY</td>
<td></td>
</tr>
<tr>
<td>TECHNICAL ISSUES</td>
<td></td>
</tr>
<tr>
<td>ADMINISTRATIVE PROCEDURES</td>
<td></td>
</tr>
<tr>
<td>MANPOWER</td>
<td></td>
</tr>
<tr>
<td>SCHEDULES</td>
<td></td>
</tr>
<tr>
<td>COST</td>
<td></td>
</tr>
<tr>
<td>PERSONALITY</td>
<td></td>
</tr>
</tbody>
</table>

Figure 18. Mean Conflict Intensity Profile with Interfacing Parties in Category I (Conceptual/Validation or Planning Phase) of Military Projects.

Figure 11. Conflict Intensity Profile of Interfacing Groups in Category II.

Figure 19. Mean Conflict Intensity Profile with Interfacing Parties in Category II (Full Scale Development or Preparation Phase) of Military Projects.

Figure 12. Conflict Intensity Profile of Interfacing Groups in Category III.

Figure 20. Mean Conflict Intensity Profile with Interfacing Parties in Category III (Production of Operation Phase) of Military Projects.

Figure 13. Conflict Intensity Profile of Interfacing Groups in Category IV.

SOURCES OF CONFLICT

<table>
<thead>
<tr>
<th>CONFLICT INTENSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>2.0</td>
</tr>
<tr>
<td>3.0</td>
</tr>
</tbody>
</table>

PRIORITIES

TECHNICAL ISSUES

ADMINISTRATIVE PROCEDURES

MANPOWER

SCHEDULES

COST

PERSONALITY

KEY

a OUTSIDE AGENCIES
b FUNCTIONAL DEPT.
c ASSIGNED PERSONNEL
d OTHER SPO MEMBERS
e SUPERVISORS
f SUBORDINATES

Figure 21. Mean Conflict Intensity Profile with Interfacing Parties in Category IV (Deployment or Termination Phase) of Military Projects.

APPENDIX K

Additional Education

Data
TABLE 20

Summary of Analysis of Variance of Conflict over Schedules for Education, Business and Military Project Managers

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>62.94</td>
<td>31.47</td>
<td>165.28*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>473</td>
<td>90.05</td>
<td>0.190</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>475</td>
<td>152.99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than the 0.01 level

TABLE 21

Summary of Analysis of Variance of Conflict over Project Priorities for Education, Business, and Military Project

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>36.19</td>
<td>18.09</td>
<td>119.37*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>472</td>
<td>71.55</td>
<td>0.152</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>474</td>
<td>107.74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than the 0.01 level

TABLE 22

Summary of Analysis of Variance of Conflict over Manpower Resources for Education, Business, and Military Project Managers

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>37.73</td>
<td>18.86</td>
<td>101.65*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>474</td>
<td>87.97</td>
<td>0.186</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>476</td>
<td>125.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than the 0.01 level
### TABLE 23
Summary of Analysis of Variance of Conflict over Specifications for Education, Business and Military Project Managers

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>30.26</td>
<td>15.13</td>
<td>94.15*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>470</td>
<td>75.53</td>
<td>0.161</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>472</td>
<td>105.79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than the 0.01 level

### TABLE 24
Summary of Analysis of Variance of Conflict over Administrative Procedures for Education, Business and Military Project Managers

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>27.66</td>
<td>13.83</td>
<td>75.61*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>473</td>
<td>86.53</td>
<td>0.183</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>475</td>
<td>114.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than 0.01 level

### TABLE 25
Summary of Analysis of Variance of Conflict over Cost and Cost Objectives for Education, Business and Military Project Managers

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>16.12</td>
<td>8.06</td>
<td>70.33*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>474</td>
<td>54.33</td>
<td>0.115</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>476</td>
<td>70.45</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than the 0.01 level
TABLE 26

Summary of Analysis of Variance of Personality Conflict for Education, Business and Military Project Managers

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>12.43</td>
<td>6.22</td>
<td>40.50*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>470</td>
<td>72.77</td>
<td>0.154</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>476</td>
<td>85.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at less than the 0.01 level
<table>
<thead>
<tr>
<th>CONFLICT SOURCE</th>
<th>SUBORDINATES BUS. MIL. EDU.</th>
<th>ASSIGNED PERSONNEL BUS. MIL. EDU.</th>
<th>FUNCTIONAL DEPTS. BUS. MIL. EDU.</th>
<th>SUPERIOR BUS. MIL. EDU.</th>
<th>TEAM MEMBERS BUS. MIL. EDU.</th>
<th>FUNDING AGENCY MIL. EDU.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHEDULES</td>
<td>0.93 (0.72) 0.26 (0.44) 0.33 (0.57)</td>
<td>1.48 (0.77) 0.52 (0.62) 0.34 (0.54)</td>
<td>1.85 (0.74) 0.80 (0.61) 0.37 (0.67)</td>
<td>0.99 (0.77) 0.61 (0.59) 0.18 (0.34)</td>
<td>1.08 (0.75) 0.55 (0.68) 0.30 (0.55)</td>
<td>1.68 (0.92) 0.11 (0.38)</td>
</tr>
<tr>
<td>PRIORITIES</td>
<td>0.64 (0.69) 0.29 (0.52) 0.28 (0.53)</td>
<td>1.22 (0.75) 0.71 (0.68) 0.30 (0.54)</td>
<td>1.69 (0.82) 1.19 (0.74) 0.37 (0.66)</td>
<td>0.66 (0.64) 0.51 (0.66) 0.24 (0.50)</td>
<td>0.92 (0.68) 0.72 (0.63) 0.35 (0.55)</td>
<td>1.24 (0.85) 0.29 (0.57)</td>
</tr>
<tr>
<td>MANPOWER</td>
<td>0.64 (0.74) 0.23 (0.67) 0.23 (0.50)</td>
<td>1.11 (0.91) 0.54 (0.73) 0.22 (0.46)</td>
<td>1.50 (0.88) 1.14 (0.73) 0.32 (0.58)</td>
<td>0.82 (0.70) 0.54 (0.73) 0.26 (0.59)</td>
<td>0.77 (0.70) 0.63 (0.75) 0.18 (0.44)</td>
<td>0.68 (0.86) 0.14 (0.44)</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>0.80 (0.66) 0.35 (0.50) 0.31 (0.61)</td>
<td>1.06 (0.74) 0.70 (0.60) 0.36 (0.61)</td>
<td>1.25 (0.75) 0.78 (0.60) 0.35 (0.66)</td>
<td>0.74 (0.70) 0.48 (0.60) 0.18 (0.41)</td>
<td>1.06 (0.63) 0.57 (0.64) 0.32 (0.54)</td>
<td>1.04 (0.86) 0.32 (0.63)</td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>0.76 (0.67) 0.31 (0.50) 0.23 (0.51)</td>
<td>0.93 (0.73) 0.63 (0.71) 0.26 (0.51)</td>
<td>1.06 (0.70) 0.51 (0.77) 0.31 (0.54)</td>
<td>0.84 (0.66) 0.53 (0.67) 0.20 (0.60)</td>
<td>0.65 (0.64) 0.48 (0.65) 0.24 (0.50)</td>
<td>0.79 (0.78) 0.19 (0.50)</td>
</tr>
<tr>
<td>PERSONALITY</td>
<td>0.63 (0.64) 0.20 (0.42) 0.31 (0.57)</td>
<td>0.80 (0.56) 0.42 (0.63) 0.37 (0.62)</td>
<td>0.93 (0.64) 0.42 (0.55) 0.33 (0.62)</td>
<td>0.48 (0.66) 0.29 (0.63) 0.19 (0.49)</td>
<td>0.93 (0.62) 0.41 (0.65) 0.47 (0.66)</td>
<td>0.46 (0.67) 0.14 (0.43)</td>
</tr>
<tr>
<td>COSTS</td>
<td>0.40 (0.61) 0.16 (0.39) 0.14 (0.41)</td>
<td>0.74 (0.82) 0.36 (0.54) 0.11 (0.33)</td>
<td>0.98 (0.72) 0.61 (0.70) 0.27 (0.52)</td>
<td>0.67 (0.52) 0.33 (0.57) 0.21 (0.50)</td>
<td>0.49 (0.62) 0.41 (0.60) 0.10 (0.50)</td>
<td>0.82 (0.81) 0.38 (0.64)</td>
</tr>
<tr>
<td>PARTY MEANS</td>
<td>0.69 (0.41) 0.26 (0.33) 0.26 (0.33)</td>
<td>1.05 (0.53) 0.56 (0.41) 0.28 (0.33)</td>
<td>1.31 (0.44) 0.82 (0.49) 0.32 (0.41)</td>
<td>0.74 (0.43) 0.44 (0.44) 0.22 (0.38)</td>
<td>0.84 (0.44) 0.57 (0.42) 0.28 (0.35)</td>
<td>0.87 (0.57) 0.22 (0.36)</td>
</tr>
</tbody>
</table>
APPENDIX L

Approval Letters
December 10, 1979

Mr. Peter Stoycheff  
4912 Dublin Rd.  
Delaware, OH 43015

Dear Peter,

As per your request, please consider this letter as giving permission to use such figures, tables, and quotations from my various writings and research papers as needed to support the research contained in your dissertation.

In the case of published copyrighted material, it will be necessary for you to secure also the permission of the copyright holder in each case.

Sincerely

Desmond L. Cook
Professor

College of Education
July 28, 1979

Peter A. Stoycheff
4912 Dublin Road
Delaware, Ohio  43015

Dear Peter

Permission is granted for you to quote extensively from our thesis ("Conflict in Civilian and Air Force Program/Project Organizations: A Comparative Study", System and Logistics, Wright Patterson AFB, Ohio, 1977) for your dissertation.

Sincerely

[Signature]
Dear Peter,

You have permission from both Terry Lee and me to reproduce any figures or tables needed for use in your own study from our thesis entitled, "Conflict in Civilian and Air Force Program/Project Organizations: A Comparative Study" (AFIT LSSR 3-77B).

Sincerely yours,

Karl J. Eschmann
Mr. Peter A. Stoycheff  
4912 Dublin Road  
Delaware, Ohio 43015

Dear Peter:

Further to our discussion, I am giving you permission to quote freely from my research papers published in various journals.

Regarding the comparison between your research and my project management study, I suggest you use Figure 2 (Sloan Mgmt Review, page 38) as a point of reference.

I would appreciate a copy of your dissertation. Good luck in your final effort.

Sincerely,

Hans J. Thamhain

HJT/py
MR. PETER STOVICEFF
4912 DURLIN ROAD
DELAWARE, OHIO 43015

PERMISSION IS GRANTED TO (1) QUOTE FROM ANY OF MY PUBLICATIONS?
(2) REPRODUCE FIGURES, AND (3) VARY THE FIGURE TITLES FOR THE
PURPOSE OF YOUR DISSERTATION OR ANY RELATED PUBLICATION.

HANS THAMMAIN
GET SYLVANIA NEEDHAM MASS
1515A EST
MGMC0493488
BIBLIOGRAPHY


Andrew, Gwen. Some observations on management problems in applied social research. The American Sociologist, May 1967, 84-89.


Burke, R. J. Methods of resolving interpersonal conflict. Personnel Administration, July/August 1969, 48-55.

Burke, R. J. Methods of resolving superior-subordinate conflict: the constructive use of subordinate differences and disagreements. Organizational Behavior and Human Performance, 1970, 5, 993-411.(a)


Chapman, Richard, Pontious, R. H., & Barnes, L. B.  


Cook, Desmond L.  Educational project management.  Columbus, Ohio: Charles E. Merrill, 1971.


Evan, William M. Superior-subordinate conflict in research organizations. Administrative Science Quarterly, June 1965, 10, 52-64.(a)

Evan, William M. Conflict and performance in r & d organizations: some preliminary findings. Industrial Management Review, Fall 1965, 7 (1), 37-46.(b)


Melancon, Donald A. A systematic approach to tension monitoring and tension reduction in an educational setting. (ERIC ED081069), 1973.


Mooney, Ross L. A reflection from experience in a project; problems in initiating a project. Theory into Practice, June 1966, V (3), 139-143.


