1991

An organizational model of family problem solving interaction

Martha Ann Rueter
Iowa State University

Follow this and additional works at: https://lib.dr.iastate.edu/rtd

Part of the Family, Life Course, and Society Commons, Quantitative, Qualitative, Comparative, and Historical Methodologies Commons, and the Theory, Knowledge and Science Commons

Recommended Citation
https://lib.dr.iastate.edu/rtd/10065

This Dissertation is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.
An organizational model of family problem-solving interaction

Rueter, Martha Ann, Ph.D.

Iowa State University, 1991
An organizational model of family problem solving interaction

by

Martha Ann Rueter

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY

Department: Human Development and Family Studies Major: Family Studies

Approved: Members of the Committee:

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

Signature was redacted for privacy.

For the Graduate College

Signature was redacted for privacy.

Iowa State University
Ames, Iowa

1991
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Review of the Literature</td>
<td>1</td>
</tr>
<tr>
<td>The need for an organizing structure</td>
<td>1</td>
</tr>
<tr>
<td>Family problem solving theory as grand theory</td>
<td>2</td>
</tr>
<tr>
<td>Recent family problem solving research</td>
<td>4</td>
</tr>
<tr>
<td>A new direction</td>
<td>7</td>
</tr>
<tr>
<td>Organization of the Study</td>
<td>8</td>
</tr>
<tr>
<td>Definitions</td>
<td>9</td>
</tr>
<tr>
<td>Basic assumptions</td>
<td>9</td>
</tr>
<tr>
<td>Delimitations</td>
<td>9</td>
</tr>
<tr>
<td>Sample description</td>
<td>10</td>
</tr>
<tr>
<td>Procedures for data collection</td>
<td>12</td>
</tr>
<tr>
<td>Summary</td>
<td>13</td>
</tr>
<tr>
<td>PART I. AN ORGANIZING MODEL OF FAMILY PROBLEM SOLVING INTERACTION</td>
<td>15</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>16</td>
</tr>
<tr>
<td>MODEL INTRODUCTION</td>
<td>17</td>
</tr>
<tr>
<td>PLACEMENT OF MODEL FACTORS AND DIMENSIONS</td>
<td>20</td>
</tr>
<tr>
<td>Family Problem Solving Factors</td>
<td>20</td>
</tr>
<tr>
<td>Problem Factors</td>
<td>21</td>
</tr>
<tr>
<td>Family Factors</td>
<td>23</td>
</tr>
<tr>
<td>Transgenerational Influences</td>
<td>26</td>
</tr>
<tr>
<td>INTEGRATION OF RESEARCH FINDINGS</td>
<td>27</td>
</tr>
<tr>
<td>Article Summaries</td>
<td>28</td>
</tr>
<tr>
<td>The Integrated Results</td>
<td>35</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>37</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>38</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>43</td>
</tr>
</tbody>
</table>
# PART II. THE EFFECT OF FAMILY PROBLEM SOLVING INTERACTION ON FAMILY PROBLEM SOLVING EFFECTIVENESS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>52</td>
</tr>
<tr>
<td>Developing the Theoretical Equations</td>
<td>53</td>
</tr>
<tr>
<td>Family Problem Solving Effectiveness Variables</td>
<td>55</td>
</tr>
<tr>
<td>Family Problem Solving Interaction Variables</td>
<td>57</td>
</tr>
<tr>
<td>METHODS</td>
<td>61</td>
</tr>
<tr>
<td>Sample</td>
<td>61</td>
</tr>
<tr>
<td>Procedures</td>
<td>62</td>
</tr>
<tr>
<td>Measures</td>
<td>63</td>
</tr>
<tr>
<td>RESULTS</td>
<td>63</td>
</tr>
<tr>
<td>The Resultant Equations: Family Problem Solving Effectiveness</td>
<td>64</td>
</tr>
<tr>
<td>The Resultant Equations: Family Problem Solving Interaction</td>
<td>72</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>77</td>
</tr>
<tr>
<td>Implications for Family Problem Solving Theory</td>
<td>77</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>79</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>80</td>
</tr>
<tr>
<td>Limitations</td>
<td>81</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>82</td>
</tr>
<tr>
<td>SUMMARY AND CONCLUSIONS</td>
<td>84</td>
</tr>
<tr>
<td>ADDITIONAL LITERATURE CITED</td>
<td>88</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>89</td>
</tr>
</tbody>
</table>
LIST OF TABLES

PART I:

TABLE 1. Dimensions for the organizing model ........................................ 19

PART II:

TABLE 1. Variable definitions, operationalizations, and reliabilities .................. 54
TABLE 2. Standardized multiple regression coefficients .................................... 65
LIST OF FIGURES

PART I:

FIGURE 1. The organizing model ................................................................. 18
FIGURE 2. The results of eight marital quality studies integrated using the organizing model ................................................................. 29

PART II:

FIGURE 1. Theoretical relationships ............................................................ 56
FIGURE 2. The relationship between solution number and solution quality .......... 68
FIGURE 3. The relationship between coordinative leadership and solution quality ...... 69
FIGURE 4. The relationship between amount of nonverbal interaction and solution quality ................................................................. 71
FIGURE 5. The relationship between coordinative leadership and solution number .... 74
INTRODUCTION

Statement of the Problem

A number of recent books and articles testify to the increasingly complex and far ranging topics addressed by family practitioners, theorists and researchers (cf. Booth, 1990; Klein and Tholin, 1990; Nye, 1988; Sprey, 1988, 1990; Sussman and Steinmetz, 1987). Many of these same reviews also contain reservations. A lack of theoretical foundations (Nye, 1988), little knowledge of others' activities (Sprey, 1988), and a loss of direction and coherence (Klein and Tholin, 1990) all threaten the expanding field of family studies.

Responses to these apparent threats come as calls for action. Klein and Tholin (1990) ask for greater attention to methods of managing the variety and complexity of theoretical pursuits. Sprey (1988) suggests integrating existing conceptual schemes into models that can promote "systematic imagining" (p. 882).

This dissertation proposes an answer to these calls. The answer takes the form of an organizing model capable of logically and coherently putting research findings and theoretical perspectives on the map of family interactions. The presentation of this organizing model is contained in Part I of this dissertation. Part II describes the initiation of the statistical analysis of the model's logic and coherence.

Review of the Literature

The need for an organizing structure

A number of recent books and articles testify to the increasingly complex and far ranging concerns addressed by family practitioners, theorists and researchers. A recent volume of *The Journal of Marriage and the Family* gives an overview of family research undertaken during the 1980's (Booth, 1990). No less than 21 different topics are covered in this decade review. According to Sprey (1990) "the study of marital and family phenomena appears to be a pluralistic and interdisciplinary undertaking" (p. 7). Klein and Tholin (1990) reviewed the
progress made by family theorists over the last twenty years. They take particular note of the increasing variety and complexity of interests. In a fifty-year review of journal articles published in *The Journal of Marriage and the Family*, Nye (1988) describes the "tremendous expansion of research" on families (p. 312). Adams (1988) similarly asserts family researchers have become "better chroniclers" and proclaims "we have only begun the task of understanding family life" (p. 15).

In spite of their joyous proclamations of progress made, many of these same reviews contain lamentations. Nye (1988) regrets the lack of theoretical foundations found in published articles and suggests the failure to integrate theory and research may be at least a partial culprit. A missing sense of direction and little knowledge of collegial activities could also result from an inadequate organization of family theory and research, according to Sprey (1988; 1990). Finally, while encouraging continued expansion of theoretical endeavors, Klein and Tholin (1990) warn against the potential for loss of direction and coherence.

**Family problem solving theory as grand theory**

Virtually every field focusing on the study of families looks at at some aspect of the problems families face. Klein and Hill (1979) suggest this pervasive nature of family problems gives the study of family problem solving one of its unique characteristics. They even go so far as to suggest this all encompassing character of family problems may eventually lead family problem solving theorists to the development of a grand theory of family interactions.

A second unique characteristic of the study of family problem solving compares theoretical development to research-based testing. Most areas of family study show an abundance of research results awaiting integration through the development of theoretical foundations. In the field of family problem solving there exists more theory than research and those theories require both integration and testing.
Out of these unique characteristics, Klein and Hill (1979) recognized a challenge for students of family problem solving. If the potential for an over-arching explanation of family behavior does indeed exist through the advancement of family problem solving theory, then problem solving theorists might create such a theory by integrating existing theories and research. The resulting form could be a testable theory useful to a wide variety of substantive areas and interests.

Of the attempts to tackle at least some aspect of this task, the theory published by Klein and Hill in 1979 represents the most comprehensive effort to date. When reviewing the existing theories, Klein and Hill (1979) noted that each tended to focus on a particular aspect of family problem solving efforts. Reiss (1971), for example, was concerned with family paradigms while Tallman (1970) looked at family structure and cultural considerations, and Aldous (1971) undertook an extensive comparison of a family's approach to different types of problems. Wieck (1971) compared the characteristics of family problem solving to the problem solving done in other groups. Finally, other theorists discussed various aspects of family communication. Straus (1968) made several propositions regarding the importance of open channels of communication. Turner (1970) emphasized the importance of communicating creative problem solutions, and Cohen (1974) considered the relative importance of verbal and nonverbal communication.

Klein and Hill (1979) integrated these theories along with research-based information available from a variety of family disciplines. The resulting product is a "prescriptive theory [that] should be able to advise families and family members about courses of action which will maximize the effectiveness of their problem-solving efforts." (Klein and Hill, p. 541, 1979).

Steinhauer (1987) also took on the challenge of integrating family theory in an attempt to develop a comprehensive theory. His efforts resulted in The Process Model of Family Functioning.
Steinhauer's motivation to develop this theory grew out of the recognized need for a method of integrating individual, family and systems approaches to therapy. With this motivational base, Steinhauer's approach takes a decidedly therapeutic emphasis. His model identifies six dimensions of family functioning: Task Accomplishment, Role Performance, Communication, Affective Involvement, Control, and Values and Norms. Each dimension was chosen for its ability to add to the explanation of how a family accomplishes, or does not accomplish, effective functioning.

In developing this theory, Steinhauer draws on numerous perspectives. He covers the work of several therapists. For example, the writings of Bowen (1978), Kantor and Lehr (1975), and Skynner (1981) are represented. He also cites the work of Klein and Hill (1979) and the theories reviewed in their writings. Later theories, including those of Fleck (1980), Minuchin and Fishman (1981), and Olson, Sprenkel, and Russell (1979), also find their way into Steinhauer's model. Noticeably missing from Steinhauer's review are recent research findings in the area of family problem solving.

Recent family problem solving research

Since 1979, contributors to the knowledge of family problem solving have focused primarily upon family interaction during the problem solving process. The tone of the interaction, the family's style of interaction, and the orderliness of their interaction have each received at least initial consideration.

Several researchers examined the impact of the tone of the interaction on family problem solving effectiveness (Forgatch, 1989; Miller, Lefcourt, Holmes, Ware, and Saleh, 1986; Sorrels and Meyers, 1983). All three studies agree hostile, coercive interaction during family problem solving reduces problem solving effectiveness. For example, Forgatch found that hostile or conflictual interchanges during problem solving resulted in poor problem solving outcome. Sorrels and Meyers compared problem solving interaction in small groups and
families. In both cases, intolerance of conflicting and incompatible ideas, criticisms, pressure to conform, and hidden agendas were detrimental to the quality of the solutions. Finally, Miller et al. report that destructive marital interaction including hostility and criticisms resulted in poor problem solutions and lower self-reported ratings of solution satisfaction.

Blechman and McEnroe (1985) tested the influence of certain interaction and demographic characteristics on family problem solving ability. Overall, the interaction characteristics appeared to play a greater role in problem solving success than family demographic characteristics. The number of strategies the family tried and the length of time they spent working on the problem held the greatest influence in terms of problem solving success. The presence of two parents during problem solving, a demographic characteristic, proved to be of moderate significance, and parental education, parental occupational prestige, and the presence of an academically and socially competent child each showed weak predictive value.

Reiss (1981) has continued to do extensive work on identifying family problem solving strategies. His work has produced three family interaction styles based on a family's world-view and the extent to which a family seeks closure and consensus during problem solving. Reiss' environmentally-sensitive families view a problem as external to the family. Their focus is on gathering information and taking a logical approach to the problem. They tend to delay closure until all possible information is gathered. Members of interpersonal-distance sensitive families focus on maintaining their independence. Problem solving is seen as a power-play situation, and acceptance of another's ideas is taken as a sign of personal weakness. Closure in these families is either quick or not achieved. Consensus-sensitive families view a problem as a personal threat and focus on maintaining familial consensus. Members surrender to the family consensus rather than offer individual solution suggestions. Dissent is not tolerated, and closure is typically quick.
Reiss postulates that a family's style of interaction is the major determinant of their problem solving style. He reports finding that other variables, for example, the family's social class, structure, race, and religion, or the intelligence, problem-solving skills, or perceptual styles of individual members are of no consequence.

The orderliness of family problem solving interaction has received both theoretical and analytical attention (Aldous and Ganey, 1989; Craddock, 1988; Kieren and Hurlbut, 1988). Aldous and Ganey tested several demographic and interaction variables to ascertain their impact on the likelihood a family will engage in problem definition prior to commencement of further problem resolution activities. Their results suggest families do not usually identify the exact nature of the problem prior to beginning problem resolution activities. The strongest determinants of problem identification proved to be the couple's marital satisfaction, gender of the participating child, balance of power between husband and wife, and the amount of structure in family communication patterns.

Kieren and Hurlbut (1988) observed the way in which families with a diabetic child solved various family problems. Their findings indicate that the extent to which a family proceeds through logical phases when approaching a problem influences their ability to solve the problem. Thus, families that engage in phases like identification of the problem, generation and assessment of alternatives, and decision making tend to produce better problem solving results than families that engage in none or only a few of these phases.

Craddock (1988) provides a theoretical review of Tallman's 1970 family problem solving theory. Tallman suggested the optimal family configuration for effective problem solving includes open channels of communication, centralization of authority, and consensus on family roles. Craddock focuses his comments on the need for centralized family authority. Through a review of literature, he finds basic support for Tallman's proposition along with
indications of potential moderating variables, for example, situational factors and gender differences.

A new direction

Unfortunately, the calls for a method of organization cited earlier (Klein and Tholin, 1990; Nye, 1988; Sprey, 1988, 1990) were made in spite of the development of these comprehensive theories; even the incorporation of the most recent family problem solving research will not likely meet the need. The reason for the continuance of the cries lies in the nature of the replies. To date, the responses have been in the form of theories (Klein and Hill, 1979; Steinhauer, 1987). A theory focuses on explanation, and the usefulness of a grand theory is in its ability to give a broad answer to a broad question. The study of families does not want for a grand theory. What is lacking is a method capable of organizing the wide range of ever-growing information.

From this standpoint, Klein and Hill's (1979) challenge to integrate existing family problem solving findings and theories into something useful across substantive fields of interest becomes better prescribed. The remedy does not lie in developing a theory that answers a question. Rather, the prescription calls for a method of logically and coherently putting theoretical perspectives and research findings on the map of family interactions.

This dissertation proposes to undertake that challenge. Two phases of the venture will be described. First, an organizational model capable of encompassing and describing the connections between various factors influential in the family problem solving process is described. Then the task of statistically testing the logic and coherence of that model is initiated.
Organization of the Study

This dissertation consists of four parts. The Introduction includes a statement of the problem and a review of the relevant literature. The first and second parts each contain one article. The first article, Part I, is a theoretical article describing a model of factors influencing family problem solving behavior. The second article, found in Part II, begins the process of testing the components of the previously described problem solving model. Both of these articles are written in manuscript form suitable for publication in *The Journal of Marriage and the Family*, therefore the style of the section headings, table and figure formats, and reference listings all comply with the standards set by this journal. Finally, the Summary and Conclusions section provides synoptic comments and recommendations for further study.

The analysis undertaken in Part II of this dissertation deserves further description. Part II contains the report of a study on the impact of certain family problem solving interaction variables upon family problem solving effectiveness. The interaction variables tested include the family's amount of creativity, amount of verbal communication, amount of nonverbal communication, amount of support, amount of interpersonal conflict, amount of communication skills, and amount of coordinative leadership skills. Solution quality and the extent of solution acceptance are the variables used to indicate family problem solving effectiveness. A theoretical model of the causal relationships and causal ordering of these variables is tested using the statistical technique of multiple regression.

The format for this dissertation has been approved by the Graduate Faculty of Iowa State University. Permission to use the data analyzed in this dissertation has been granted by the Iowa Youth and Families Project. Procedures for collection of the data (described below) were approved by the Human Subjects Review Committee at Iowa State University.
Definitions

The following list contains definitions used in this dissertation.

1. Family: Two or more persons related by blood, adoption, marriage or commitment who live in the same household.

2. Family Goal: An unachieved yet potentially attainable state of affairs.

3. Family Problem: A situation involving an unachieved but potentially attainable family goal. The means for reaching the family goal are not immediately apparent but are considered feasible.

4. Family Problem Solving: Family interactions directed toward achieving a family goal.

5. Family Solution: A means for reaching a family goal.

6. Means: A family plan for using or obtaining the resources necessary for family goal attainment.

Basic assumptions

The following list contains assumptions used in this dissertation.

1. Most families wish to solve their problems.

2. Most families take active steps to resolve their problems.

3. Families vary in their problem solving effectiveness.

4. Family problem solving behavior is influenced by many variables.

Delimitations

The research and results described in Part II of this dissertation are delimited to white families with four members, two married parents, an adolescent child, and another child within four years of age from the adolescent child, living in the same household in a rural, midwestern section of the United States.
**Sample description**

The research described in Part II of this dissertation utilized a portion of the first panel of data gathered by the Iowa Youth and Families Project located at Iowa State University. The sample from which data were collected consisted of 451 white, primarily middle-class families. Each family included two parents, a 7th grade adolescent, and a sibling who was within four years of age from the 7th grade child.

Sample fathers ranged in age from 31 to 68 years with a median age of 39 years. Mothers ranged in age from 29 to 53 years with a median age of 37 years. The seventh graders, 215 (48 percent) of whom were boys and 236 (52 percent) of whom were girls, ranged in age from 12.1 years to 14.7 years. The average age for the seventh graders was 13.2 years. Of the 451 siblings, 213 (47 percent) were younger siblings, 231 (51 percent) were older siblings and 7 (2 percent) were twins. The siblings ranged in age from 9.4 years to 18 years with a mean of 13.5 years. Looking at both siblings and seventh graders together, 48 percent of the children in this study were boys; 52 percent of the children were girls.

Since the sample is restricted to families with at least two children, the families in this study are larger on average than one would expect to find in a general population survey. Family size ranged from 4 to 13 members with an average family size of 4.95 members. Mean age at marriage was 21.8 years for fathers and 19.8 years for mothers. Length of marriage ranged from 12 to 35 years. The average length of marriage was 17.8 years. Six percent of the fathers and five percent of the mothers were previously married.

These families lived in one of eight adjacent counties located in a midwestern state. Thirty-four percent of the sample families lived on farms. Twelve percent of the families lived in rural areas but not on a farm, and 54 percent of the families lived in towns with populations no larger than 6,500.
The total 1988 income for sample families, including wages, net farm income, and all other sources of income, ranged from -$61,474 to $259,000. The median total income was $33,700 while the mean total income was $38,507. *Per capita* income for all families, based on total 1988 income divided by household size, showed a median of $6,979 and a mean of $7,703. Eleven percent of the sample families fell below the poverty line as defined by the Census Bureau; the state average for poverty in rural areas was 14 percent to 18 percent.

The majority of both fathers and mothers in these families were in the paid labor force. Of the fathers, 96 percent were employed an average of 52 hours per week in one main job. Thirty one percent of these fathers held more than one job. One percent of the fathers were employed less than 21 hours per week, and three percent were not employed outside the home. Among the mothers, 60 percent worked an average of 46 hours per week in one main job. Sixteen percent of these mothers held an additional job. Twenty one percent of the mothers worked less than 21 hours per week, and 19 percent classified themselves as homemakers.

The parents in this sample were employed in a variety of occupations. Fathers employed in professional, managerial, and white collar jobs made up 36 percent of the sample. Those engaged as skilled or unskilled laborers accounted for 43 percent of the sample fathers. Twenty one percent of the fathers received income from farming only. Of the employed mothers, 66 percent held jobs in professional, managerial, or white collar positions. Thirty three percent were employed as skilled or unskilled laborers, and one percent were farmers.

The median level of educational attainment for both mothers and fathers in this sample was one year beyond high school. The range for mothers was ninth grade to Master's degree while the range for fathers was eighth grade to Ph.D. Fifty one percent of the fathers and 54.7 percent of the mothers received educational training beyond high school. Twenty-three percent of the fathers and 18 percent of the mothers completed college.
Procedures for data collection

The families in this study were recruited through 34 local school systems in eight adjacent counties in a single midwestern state with the endorsement of the State Department of Education. Names and addresses of 7th grade students and their parents were obtained from all schools in communities with a population of 6,500 or less in the identified counties. Families were sent a letter explaining the study and were subsequently contacted by telephone and asked to participate.

Of those families named by schools, 87 percent were contacted and found to meet the study's eligibility requirements of having two parents, a seventh grader and a sibling within four years of age from the seventh grade child. From this pool of eligible families, 78.8 percent agreed to take part in the study. Each participating family received $250 ($75.00 to each parent and $50.00 to each child).

Each family was visited twice in their own home. For the first visit, which lasted approximately two hours, family members individually completed questionnaires and responded to a set of structured interview questions. During the second visit, family members were videotaped while they engaged in four different structured interaction tasks. The second visit also lasted about two hours. The research described in this dissertation made use of data collected during task two of the second visit.

A trained interviewer began the second session by asking each individual to complete a short questionnaire designed to identify current family disagreements or concerns (e.g., issues regarding chores, recreation, money). After completing this questionnaire, family members were gathered around a table in preparation for the four videotaped interaction tasks.

For each task, the interviewer explained the task procedures, checked the video-recording equipment, asked the family to continue talking until they were asked to stop, and then left the room for another part of the house out of ear-shot of the family's discussion.
After the task-time had elapsed, the interviewer returned to the family, asked them to stop their discussion and began describing the procedures for the next task.

The problem solving task lasted 15 minutes. During this time, family members discussed and attempted to resolve existing family problems. The interviewer identified three family problems to discuss from the questionnaires completed by family members earlier in the session. As for all the tasks, the interviewer left the room after asking the family to begin its discussion and returned when the time allotted for the task had passed.

After all four video-taped tasks were completed, the interviewer placed the videotape in an envelope, sealed it, and assured the family the sealed envelope would be returned promptly to the research center to be viewed only by trained project staff.

Family interaction during each of the video-taped tasks was coded by trained project observers using the Iowa Family Interaction Rating Scales (Melby et al., 1989). This coding system is designed to ascertain behavioral characteristics of individual family members and the quality of behavior exchange between family members. Project observers were staff members who had received several weeks of training on rating family interactions and who specialized in coding one of the four interaction tasks.

Summary

Since the publication of Klein and Hill's (1979) theoretical model of family problem solving, the study of family processes has made noteworthy advances. Not only is there an increase in knowledge specific to family problem solving behavior, the whole body of knowledge about family processes has grown tremendously (Adams, 1988; Booth, 1990; Klein and Tholin, 1990; Nye, 1988; Sprey, 1990). Along with this increase in knowledge, the need for organization has also grown (Klein and Tholin, 1990; Nye, 1988; Sprey, 1990).

While the complexity of family problem solving behavior may appear overwhelming, it is this drawback that also provides its strength. By taking advantage of the pervasive nature of
family problems, the study of family problem solving may eventually develop the desired organizing structure.

This dissertation proposes to address the need for a useful, testable organizing model for family problem solving interaction. Such a venture does not proceed with haste. Therefore, Parts I and II of this dissertation contain the initial steps in the process. Part I contains the description of a model capable of encompassing and describing the relationships between various factors influential in the problem solving process. Part II begins the process of testing the logic and coherence of the connections between the model factors. The linkages tested in this study are those between the dimensions of family problem solving interaction and family problem solving effectiveness.
PART I. AN ORGANIZING MODEL OF FAMILY PROBLEM SOLVING INTERACTION
INTRODUCTION

A number of recent books and articles testify to the increasingly complex and far ranging topics addressed by family practitioners, theorists and researchers (cf. Booth, 1990; Klein and Tholin, 1990; Nye, 1988; Sprey, 1988, 1990; Sussman and Steinmetz, 1987). In spite of their joyous proclamations of progress, many of these same reviews also contain lamentations. Nye (1988) regrets the lack of theoretical foundations found in published articles. He suggests the failure to integrate theory and research may be at least a partial culprit. An inadequate organization of family theory and research, according to Sprey (1988, 1990), results in a missing sense of direction and little knowledge of collegial activities. Finally, while encouraging continued expansion of theoretical endeavors, Klein and Tholin (1990) warn against the potential loss of direction and coherence.

Responses to this apparent lack of an organizational scheme come as calls for action. Klein and Tholin (1990) ask for greater attention to methods of managing the variety and complexity of theoretical pursuits. Sprey (1988) suggests integrating existing conceptual schemes into models that can promote "systematic imagining" (p. 882).

This paper proposes an answer to these calls. The answer takes the form of an organizing model capable of logically and coherently putting research findings and theoretical perspectives on the map of family interactions. The presentation of this organizing model proceeds in three steps. First, the model is introduced. Following its introduction, a review of the literature that proved instrumental in determining the model's factors and linkages helps to further describe the model. The final step contains an example of how this organizing model can help to organize and integrate current knowledge while stimulating further inquiry.
MODEL INTRODUCTION

Figure 1 shows a diagram of the proposed organizing model. Table 1 lists suggested dimensions for each of the model's factors. In building this model, the author relied heavily on the previous work of Klein and Hill (1979). Limitations of space do not allow a review of their work commensurate with the level of its contribution to the understanding of family problem solving behavior. The interested reader would do well to refer to their original writing.

Definitions for each of the model's factors and the listed dimensions can be found in the Appendix. The dimensions and their definitions are meant to be suggestive rather than inclusive or exclusive. They are offered as examples in the hope of adding clarity to their assigned factor.

The model indicates two levels of influence. The darkest lines represent primary paths of influence. The lighter lines indicate secondary paths. As one can see, the family characteristic factors (e.g. Family Interaction Characteristics, Member Characteristics) are enclosed in a box. This box symbolizes the interconnectedness of these factors. Thus the model proposes the feedback from Family Problem Solving Interaction and Family Problem Solving Effectiveness holds the potential to influence each of the family characteristic factors. Also, the box helps to represent the totality of the reciprocal relationships between the family factors. For example, Family Demographic Characteristics may influence Family Interaction Characteristics, or Family Resource Characteristics -Material could influence Member Characteristics, and so forth.
FIGURE 1. THE ORGANIZATIONAL MODEL

Transgenerational Family Characteristics

Family Interaction Characteristics

Member Characteristics

Family Resource Characteristics - Human

Family Resource Characteristics - Material

Family Demographic Characteristics

Problem Perception

Problem Characteristics

Problem Context

Family Problem Solving Interaction

Family Problem Solving Effectiveness
<table>
<thead>
<tr>
<th>Transgenerational Factor</th>
<th>Family Factors</th>
<th>Problem Factors</th>
<th>Family Problem Solving Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSGENERATIONAL FAMILY CHARACTERISTICS</td>
<td>FAMILY INTERACTION CHARACTERISTICS</td>
<td>PROBLEM PERCEPTION</td>
<td>FAMILY PROBLEM SOLVING EFFECTIVENESS</td>
</tr>
<tr>
<td>-Family paradigm</td>
<td>-Values, norms</td>
<td>-Goal importance</td>
<td>-Solution acceptance</td>
</tr>
<tr>
<td>-Particularism</td>
<td>-Family style</td>
<td>-Difficulty</td>
<td>-Solution quality</td>
</tr>
<tr>
<td>-Unresolved Issues</td>
<td>-Parenting style</td>
<td>-Mutuality</td>
<td></td>
</tr>
<tr>
<td>-Family resources</td>
<td>-Development flexibility</td>
<td>-Threat</td>
<td></td>
</tr>
<tr>
<td>MEMBER CHARACTERISTICS</td>
<td>-Cognitive development</td>
<td>-Uncertainty</td>
<td></td>
</tr>
<tr>
<td>-Problem solving motivation</td>
<td>-Self-esteem</td>
<td>-Causal attribution</td>
<td></td>
</tr>
<tr>
<td>-Emotional well-being</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMILY RESOURCE CHARACTERISTICS -HUMAN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Level of problem solving competence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Homogeneity of problem solving competence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Level of experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Homogeneity of experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMILY RESOURCE CHARACTERISTICS -MATERIAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMILY DEMOGRAPHIC CHARACTERISTICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Homogeneity of age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Homogeneity of gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Family life cycle stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Family size</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PLACEMENT OF MODEL FACTORS AND DIMENSIONS

As articulated by Klein and Hill (1979), the way to develop a model of this nature is to integrate existing knowledge. This section identifies how available knowledge was pulled together to establish the ordering of the model factors and suggest their dimensions. At times this model mimics linkages previously worked out by Klein and Hill. Often, recent findings or a potent theoretical perspective suggest a factor and its connections. In some cases, neither theory nor previous research avails itself, and then logic and intuition point the way.

Family Problem Solving Factors

Family Problem Solving Effectiveness. This model accepts Klein and Hill's (1979) assertion that Family Problem Solving Effectiveness is the variable of interest. Klein and Hill go on to identify two dimensions of Family Problem Solving Effectiveness, "Solution acceptance" and "Solution quality." This organizing model also adopts "Solution acceptance" and "Solution quality" as the primary dimensions of Family Problem Solving Effectiveness.

Family Problem Solving Interaction. Three factors are proposed to directly influence Family Problem Solving Effectiveness. Among these three, the most proximal is Family Problem Solving Interaction. Klein and Hill noted the complexity in identifying relationships between Family Problem Solving Effectiveness and Family Problem Solving Interaction, and the meager supply of empirical evidence gave them little direction. In recent years, the situation has seen some slight improvement. Blechman and McEnroe (1985), along with Vernon and Strudensky (1988), give limited support to the positive association between "Amount of communication skills" and Family Problem Solving Effectiveness. Aldous and Ganey (1989), Craddock (1980) and Kieren and Hurlbut (1988) investigated the effect of "Phasing rationality" on Family Problem Solving Effectiveness, and the results of several studies indicate the debilitating effects of hostility and coercion, indicators of "Amount of personality-oriented
conflict," on the problem solving process (Forgatch, 1989; Miller, Lefcourt, Holmes, Ware, and Saleh, 1986; Sorrels and Meyers, 1983; and Vuchinich, Emery, and Cassidy, 1988).

These last studies point to one of the few modifications made to this set of propositions. Their results suggest personality-oriented conflict reduces family problem solving effectiveness. On the other hand, issue-oriented conflict may enhance effectiveness. In order to more clearly separate the effects of these differing forms of conflict, the present model suggests the following conflict dimensions: "Amount of issue-oriented," "Distribution of issue-oriented conflict," "Amount of personality-oriented conflict," and "Distribution of personality-oriented conflict."

Some dimensions for the Family Problem Solving Interaction factor received a "cosmetic" change. Klein and Hill named the distributive dimensions "Concentration of ...". To ease interpretation, the present model renamed them "Distribution of ...". Making this change results in positive relationships for distributive variables where Klein and Hill originally proposed inverse relationships.

**Problem Factors**

Three factors are proposed to describe aspects of the problem itself. Problem Perception refers to the emotional, psychological meaning the family attaches to its problem situation. Problem Characteristics are the more objective aspects of the problem. The Problem Context factor gives a "setting" to the problem situation.

**Problem Perception.** Klein and Hill commented on the importance of the family's perception of the problem but did not place this factor in their model. The inclusion of Problem Perception in the present model finds foundation partially in the suggestions of particular theorists (cf. Adams, 1988; Kaufman, 1990; McClain and Weigert, 1979; Mead, 1934; Reiss and Oliveri, 1980; Rettig, 1988), partially in intuition, and primarily in the work of Witteman (1988).
Witteman (1988) identified five sets of problem conceptualizations. For each concept, he predicted a response pattern. His results give moderate to strong support for his predictions.

Although Witteman's (1988) work utilized individuals rather than family groups, his findings do furnish useful direction and certain of his concepts appear to warrant placement in a family problem solving model. Those chosen include "Goal importance", "Mutuality", "Uncertainty", and "Causal attribution". In addition, "Difficulty" and "Threat" appear intuitively reasonable for consideration in Problem Perception.

**Problem Characteristics.** Few systematic studies compare the ways families deal with the variety of problems they encounter. With little research-based guidance, the placement of these factors must rely primarily upon logic and intuition. For example, if one accepts that a family develops a perception of the problem, logic requires the problem to exist prior to development of a perception. Therefore, this model suggests a direct relationship between Problem Characteristics and Problem Perception.

Also, one can imagine different kinds of problems would lend themselves to different resolutions. For example, deciding which main dish to prepare for the evening meal seems more easily resolved than say, attempting to reduce the number of fights between children. With this in mind, the model also proposes a link between Problem Characteristics and Family Problem Solving Effectiveness.

The dimensions for this factor are, with slight exception, those suggested by Klein and Hill (1979) in their earlier model. The original list appears quite inclusive and the paucity of research in this realm of family problem solving precludes further refinement of the identified dimensions.

**Problem Context.** The final problem factor, Problem Context, enters into Klein and Hill's model only through the dimension societal complexity in their Social Placement factor. Several
theorists, however, point to the need to give more attention to the context in which a problem occurs (see Adams, 1988; Deacon and Firebaugh, 1988; Klein, 1983; Oliveri and Reiss, 1981; Paolucci, Hall, and Axinn, 1977; Reiss and Oliveri, 1980; Rettig, 1988; Walker, 1985).

Accordingly, this organizing model suggests two direct paths for Problem Context.

This factor is expected to influence Problem Perception and Family Problem Solving Effectiveness. Thus, depending on cultural norms, the environmental situation, or the help or hindrance of institutions and networks, a problem perceived as very problematic for one family may seem unproblematic to another. In addition, the family's actual ability to solve their problem could be connected to the amicability of their particular Problem Context.

**Family Factors**

This group of factors describes various features of families. A family's established interaction patterns are subsumed under Family Interaction Characteristics. Member Characteristics adds the traits of individual family members to the model. Family resources are divided into two factors: Family Resource Characteristics - Human and Family Resource Characteristics - Material. Finally, a family's demographic structure is identified by the factor Family Demographic Characteristics.

**Family Interaction Characteristics.** Klein and Hill (1979) stated their belief that the way a family interacted in the past significantly influences their interaction during present problem solving. Recent literature supports this belief (Forgatch, 1989; Lord and Alliger, 1985; Witteman, 1988), and the present model accepts it also.

This organizing model also suggests Family Interaction Characteristics influence the family's Problem Perception. As will be argued for each of the family factors, the established and on-going conditions in the family will likely have a strong impact upon the way a family views their problem situation.
The identification of the suggested Family Interaction Characteristics dimensions represents an assimilation of various sources. The "values and norms" dimension was chosen because of its significance in a number of major theories (cf. Systems, Symbolic Interaction, Structural Functionalism). "Family style" is an acknowledgement of the relevance of work done by numerous family types theorists (cf. Constantine, 1986; Kantor and Lehr, 1975; Olson, Sprenkel, and Russell, 1979; Reiss, 1981). Peterson and Rollins' (1987) review of the extensive influence of parental behavior on parent-child relationships motivated the inclusion of "Parenting style". Finally, "Developmental flexibility" comes directly from Klein and Hill's (1979) model.

**Member Characteristics.** This model factor, Member Characteristics, emphasizes individual traits of family members. As with Family Interaction Characteristics, the organizing model proposes linkages between both Family Problem Solving Interaction and Problem Perception. With one exception, Member Characteristics remains essentially unchanged from the same factor composed by Klein and Hill. The findings of Vernon and Strudensky's 1988 study motivated the one modification. Their results indicate the positive benefit of strategy verbalization when one attempts to resolve a novel problem. With this in mind, the definition for the dimension "Cognitive development" now includes the ability to verbalize information.

**Family Resource Characteristics - Human and - Material.** Several theorists discuss the impact of available resources on a family's ability to resolve its problems (see for example, Deacon and Firebaugh, 1988; Gross, Crandall, and Knoll, 1980; Paolucci, Hall, and Axinn, 1977; Rettig, 1988). Following their guidance, this model suggests both Family Resource Characteristics - Human and Family Resource Characteristics - Material influence Family Problem Solving Effectiveness. In addition, the model indicates that available resources will help to color the family's Problem Perception.
The work done by the aforementioned theorists plus two dimensions from Klein and Hill's (1979) model come together to build the dimensions for Family Resource Characteristics - Human and Family Resource Characteristics - Material. The first of Klein and Hill's dimensions to enhance the Family Resource Characteristics - Human factor is "Homogeneity of competencies". This variable was defined to refer to problem solving competencies and it, along with "Level of problem solving competencies", is incorporated into the Family Resource Characteristics - Human factor.

The second dimension in Klein and Hill's (1979) model which points to potential human resources is "social status". This dimension was intended to indicate social class, a variable not included in the present model. Its definition, however, suggests the measurement of education and occupation. The "Homogeneity of experience" and "Level of experience" dimensions found under Family Resource Characteristics - Human suggest the measurement of both education and occupation as well as past problem solving experiences.

Klein and Hill's (1979) social status dimension also points to the importance of including money as a family resource. Since financial resources would be considered a material family resource, "Income" is found under the "Family Resource Characteristics - Material" factor. "Time" and "Tools" are additional dimensions included in the Family Resource Characteristics - Material factor.

*Family Demographic Characteristics.* The factor Family Demographic Characteristics was crafted out of four of the dimensions Klein and Hill (1979) utilized in their Group Structural Properties factor. This organizing model suggests both a direct and a moderating effect for this factor. The direct effect of Family Demographic Characteristics is on Family Problem Solving Interaction. This connection, however, appears tenuous. Evidence available to date suggests many demographic variables do not directly influence Family Problem Solving Interaction (Blechman and McEnroe, 1985; Reiss and Oliveri, 1980). As pointed out in the earlier
discussion of marital quality, such results may change with the consideration of interaction and mediating variables. If, however, the results of future studies continue in their present direction, the model will require appropriate adjustment.

Certain of the Family Demographic Characteristics are proposed to moderate the effect of a family's material resources on Problem Perception. Although little research exists to provide a theoretical foundation for these proposals, intuition and logic suggest the following relationships: "Family life cycle stage" moderates the influence of "Income" on Problem Perception in a curvilinear manner such that its influence grows during the early stages of family life and begins to decline with the initiation of launching. The strongest influence of "Time" on "Family life cycle stage" occurs during initial family stages and tapers off as the family grows older. Finally, "Family size" moderates the effect of "Income", "Time", and "Tools" on Problem Perception such that as family size increases, the influence of "Income", "Time", and "Tools" on the family's perception of the problem grows.

Transgenerational Influences

The efforts of various theoretical perspectives, primarily the developmentalists, have resulted in a growing awareness of transgenerational influences on family processes (cf. Carter and McGoldrick, 1980; Duvall, 1977; Mattessich and Hill, 1987). For the specific case of family problem solving processes, discussion has occurred both in Klein and Hill (1979) and Klein (1983), but no guiding research exists. The newness of this factor for family problem solving affords little foundation from which to build dimensions and propositions. The suggested dimensions are merely a start, and while the model proposes transgenerational influences on Family Interaction Characteristics, Member Characteristics, and Family Resource Characteristics - Human, the potential for additional relationships seems quite possible.
INTEGRATION OF RESEARCH FINDINGS

Overall, a model like this one holds the potential to give structure and integration to many areas of interest to family scholars and practitioners. As will be shown through the following example, one can use this model to map out a variety of research findings. Once located within the model's factors, the implications of those findings and specific directions for further study become more evident.

As one might expect, literature directly focused on family problem solving lends itself most easily to integration into this model. More importantly, articles covering other topics can fit the model's structure. The following discussion provides an example of how the model might be used to integrate information on marital quality. The articles chosen for this example were published in *The Journal of Marriage and the Family* during 1990, and each utilized a report of marital quality for its outcome variable.

To begin this exercise, certain of the organizing model's factors must be defined in terms of marital quality. The first factor to benefit from specific definition is Family Problem Solving Effectiveness. If a family problem is defined as a situation involving an unachieved but potentially attainable family goal, then marital quality could be considered a goal toward which the family constantly strives. Family Problem Solving Effectiveness in this situation is thus identified as the family's level of marital quality. Family Problem Solving Interaction is defined as the family's interactions in their attempts to achieve their goal. For this situation, current, daily or observed interactions could be identified as Family Problem Solving Interaction. Problem Characteristics are the features of the problem being studied. In this case, Problem Characteristics would be the "Effort," "Complexity," etc. characteristic of marital quality. Finally, Problem Perception is the "Goal importance," "Difficulty," "Uncertainty," etc., the family attaches to the achievement of marital quality. The fit for the
remaining factors is more apparent since they require little, if any, translation for this particular situation.

This example is intended to demonstrate the organizing model's usefulness. Rather than a thorough review of the articles, only their basic findings will be summarized. Following each summary, the variables of interest will be located within the appropriate factor on the organizing model, and the fit between the study and the model will be discussed. A picture giving an overall sense of the gathered information develops as each variable is located within the model. Figure 2 presents the completed image for those who wish to follow the organizing process.

Marital quality is the one variable common to each of these articles. As previously defined, marital quality will be considered the measure of Family Problem Solving Effectiveness. Statements placing marital quality within the Family Problem Solving Effectiveness factor will not be repeated for each article summary.

Article Summaries

Of the articles to be discussed, two look at the impact of family structure variables on marital quality. In the first article, Kurdek (1990) measured the effect of the child's age on marital quality in one-child, remarried families. For each family, the husband was the stepparent. The child in the families ranged in age from one year to twenty years. The results of this study indicate marital quality is not related to the age level of the child. Both mothers and stepfathers reported similar marital quality across all children's ages.

The age of children is often used as an indicator of a family's life cycle stage. This appears to be the case in Kurdek's article. Therefore, child's age is located within the Family Demographic Characteristics factor.

Looking at the model, one can see two connections flowing from Family Demographic Characteristics. This factor could influence marital quality either through Family Problem
FIGURE 2. THE RESULTS OF EIGHT MARITAL QUALITY STUDIES INTEGRATED USING THE ORGANIZATIONAL MODEL

- Family Interaction Characteristics
  - Values and behavior congruence
  - Conflict coping style
- Member Characteristics
  - Felt economic strain
  - Self-intent, Introspective self-blame, Positive approach, and Avoidance coping styles
- Family Resource Characteristics - Human
  - Religious heterogamy
- Family Resource Characteristics - Material
  - Shift work
  - Income, Work instability, Economic pressure
- Family Demographic Characteristics
  - Parenthood status
  - Child age

- Problem Perception
  - Negative interaction
  - Marital quality
  - Family Problem Solving Interaction
  - Family Problem Solving Effectiveness

Transgenerational Family Characteristics

---


Solving Interaction or by moderating the linkages formed by Family Resource Characteristics - Material. Future studies of the effect of family life cycle stage on marital quality may wish to evaluate these mediating and moderating influences.

The second article to test a family structure variable begins to build one of those intermediate paths. MacDermid, Huston, and McHale (1990) studied nearly 100 newly married couples over a two and one-half year period. Their primary interest was in the effect of parental status and the couple's congruence of values and behavior on marital quality. The results of this study suggest an interaction between these two variables.

MacDermid et al. (1990) found that parental status by itself did not influence marital quality. Both new parents and non-parents reported similar levels of feelings of love for each other and marital satisfaction. On the other hand, parental status did come into play when these researchers looked at the congruence between sex-role attitudes and the postnatal division of labor. Incongruities between the values and behavior of non-parents did not explain individual differences in marital quality. However, lack of congruence for new parents proved a strong predictor of lower marital quality.

MacDermid et al. (1990) go on to suggest an explanation for their results. They speculate that the newly experienced demands of child-care spur a reevaluation of household roles. When a mismatch between behavior and beliefs exists, discontent grows.

The variables from the MacDermid et al. (1990) study appear to fit neatly into two of the organizing model's factors. The transition from non-parenthood to parenthood represents a change in family life cycle stage. Thus parental status is placed within Family Demographic Characteristics. Values and behavior congruence suggests a comparison between two dimensions of Family Interaction Characteristics: The "Values, norms" and "Parenting style" or "Family style", depending upon which aspect of parental roles one focuses on, and the variable is accordingly located within this factor.
The paths identified on the organizing model suggest Family Interaction Characteristics and Family Demographic Characteristics come together in Family Problem Solving Interaction to influence Family Problem Solving Effectiveness. The results of this study indicate it is the combination of these two factors and not Family Demographic Characteristics alone that gives parental status its influence over marital quality. Future researchers might wish to test the mediating effect of Family Problem Solving Interaction.

The organizing model also points to several other avenues to follow when searching out the combined impact of parental status and values and behavior congruence. For example, studies might consider the intermediate impact of Problem Perception on Family Problem Solving Interaction by way of Family Interaction Characteristics. Also looking into the moderating effect of Family Demographic Characteristics on Family Resource Characteristics - Material and its subsequent linkages might prove useful.

White and Keith (1990), used a national survey to study the effect of shift work on marital quality. Their results indicate a negative effect of shift work on several aspects of marital quality.

Lack of available time, according to White and Keith, is the potent aspect of shift work as it impacts upon marital quality. "Time" is a dimension of Family Resource Characteristics - Material. Therefore shift work will be placed within this factor.

White and Keith's (1990) research design hypothesized a direct effect between Family Resource Characteristics - Material and Family Problem Solving Effectiveness. The organizing model also proposes this linkage. In addition, the model indicates the potential for other factors to enter into this relationship. For example, one might wish to evaluate the path leading from Family Resource Characteristics - Material to Problem Perception. Or, the moderating effects of Family Demographic Characteristics might be considered.
Bowman (1990) focused on the coping style of family members and the effect of their coping manner on, among other things, marital quality. Through factor analysis of scale items, she identified five coping styles: Conflict, Self-interest, Introspective Self-blame, Positive Approach, and Avoidance. Her results indicate a positive relationship between the use of the Positive Approach coping style and marital quality and an inverse relationship for each of the remaining four methods of coping.

In this study, subjects were asked to identify their own style of coping, not their family's style. Considering the individual nature of these reports, all but one of the coping styles is placed within Member Characteristics. The Conflict style is described as "reflecting conflict, criticism, sarcasm, and revenge" (p. 467) each of which appear to require interaction with family members. Therefore the Conflict coping style is located within the Family Interaction Characteristics factor.

Bowman's (1990) study suggests certain aspects of both Family Interaction Characteristics and Member Characteristics in the form of coping styles influence marital quality. Placing these coping styles on the organizing model helps to identify potential mediating factors. For instance, the model suggests looking into the intervening influence of Problem Perception and/or Family Problem Solving Interaction.

The third article, written by Shehan, Bock and Lee (1990), described the impact of religious heterogamy among Catholic couples on their marital quality. These researchers found that Catholics married to Non-Catholics do not report lower marital quality than Catholics married to Catholics. In addition, Shehan et al. note that religiously heterogamous couples report much lower church attendance than do homogamous couples.

The finding indicating low church attendance by religiously heterogamous couples and higher church attendance by those couples sharing the same religious beliefs suggests the dimension of "Homogeneity of experience". Religiously homogamous couples act to maintain
similarity in experience by going to church. Heterogamous couples achieve the same by not attending church. With this in mind, religious homogamy is assigned to the Family Resource Characteristics - Human factor.

The organizing model indicates Family Resource Characteristics - Human influences marital quality directly and also indirectly. The results of this study help to fill in the direct path. A future study might consider the indirect linkages. For example, the effect of Family Resource Characteristics - Human on Family Problem Solving Effectiveness as it is mediated by Problem Perception and Family Problem Solving Interaction could be analyzed.

Two quite similar articles give an indication of the effect of Family Problem Solving Interaction on marital quality. Halford, Hahlweg, and Dunne (1990) observed the problem solving behaviors of happy and unhappy German and Australian couples to ascertain the differential characteristics of their interaction. The article reports distressed couples showed significantly higher rates of negative verbal and nonverbal behaviors and were more likely to engage in coercive escalation than non-distressed couples.

Roberts and Kroff (1990) also observed the problem solving interaction of marital couples. They too hoped to identify the interaction characteristics of satisfied versus dissatisfied couples. Their results agree with those of the Halford et al. (1990) study. Specifically, they found that fully 50 percent of the variance in marital satisfaction was explained by the emotional quality of the couple's interaction.

Both of these studies utilized an observational design to study couple interaction. The immediacy of the resultant variable of interest, in this case negative interaction, would place it within the Family Problem Solving Interaction factor.

The organizing model indicates a direct connection between Family Problem Solving Interaction and Family Problem Solving Effectiveness, and the designs of these two studies correspond with the model. Researchers who wished to study the antecedents of the emotive
dimensions of a couple's interaction could identify several study questions from an examination of the model. For instance, Problem Perception, Family Interaction Characteristics, and Member Characteristics are suggested to influence Family Problem Solving Interaction directly, and each could be studied separately or in combination.

The findings reported by Conger et al. (1990) provide an indication of how certain antecedent factors might influence Family Problem Solving Interaction. This article describes the results of a study utilizing both survey and observational variables. Couples were asked to report on their income, work stability, economic pressures, feelings of strain, as well as marital quality. The couples were also observed during an interaction task. The results of this study suggest that insufficient income, work instability and economic pressures act to increase a couple's feelings of strain. Those feelings then increase the husband's hostile interactions, and, as a result, the couple reports lower marital quality.

In the Conger et al. (1990) study, income, work instability, and economic pressure are used as indicators of the family's income sufficiency and are therefore placed within the Family Resource Characteristics - Material factor. Feelings of strain is a measure of "Emotional well-being." Thus this variable is assigned to Member Characteristic. Finally, hostile, or negative, interactions as determined through observation have been previously identified as fitting within Family Problem Solving Interaction.

The design of the Conger et al. (1990) study calls the organizing model's secondary linkages into play. The model suggests the family characteristic factors along with the Member Characteristics factor will likely influence one another. This study indicates that Family Resource Characteristics - Material influences Member Characteristics. Then, as the model indicates, the avenues of influence lead through Family Problem Solving Interaction to reach Family Problem Solving Effectiveness. Extensions of this study might consider adding Problem Perception as an intermediate variable. By doing so, one could assess the impact of
numerous other variables on Family Problem Solving Interaction via Problem Perception. Or a future study might add Family Demographic Characteristics to the study equation.

**The Integrated Results**

With the summaries of the articles completed, this example of the model's usefulness can continue with a look at the integrated findings. Figure 2 shows the organizing model with all variables placed within their identified factor. Of course, the information appears rather sketchy since this review covered only eight articles. The family factors, along with Family Problem Solving Interaction, each received at least some attention. Notably missing from the ranks of the variables tested in these studies are those that would be entered into Transgenerational Family Characteristics, and the problem factors, Problem Perception, Problem Characteristics, and Problem Context. Again, these “holes” most likely result from the limited scope of this review. A fuller search may well fill the gaps.

Even this abbreviated literature search reveals useful information when mapped onto the organizing model. What is known and what might yet be discovered becomes more apparent. For example, three of the eight articles (Conger et al., 1990; Halford et al., 1990; Roberts and KrokoFF, 1990) reported an inverse relationship between negative interactions and reports of marital quality. Negative interaction appears to possess a potent influence on marital quality. The model helps to explain the strength of this relationship. Family Problem Solving Interaction shows the most immediate and direct linkage to Family Problem Solving Effectiveness. With no potential for mediating or moderating factors to buffer the impact, one could expect to see such consistent and strong results.

A look at the family factors reveals another implication of these findings. The combined results of these studies suggest little solitary or direct effect from the family factors on marital quality. Shift work (White and Keith, 1990), assigned to Family Resource Characteristics - Material, is the only influential variable for which the model shows a direct
path to marital quality. Bowman's (1990) coping styles are also reported to influence marital quality, but, as the model suggests, this effect is likely to be mediated by a person's immediate interactions with their spouse. The remaining results range from showing no effect to combined or mediated effects on marital quality. The lack of significant individual or direct influence can be more clearly understood after a look at the model. Such results appear to represent both the interactive nature of the family characteristics and their more distal location from Family Problem Solving Effectiveness.

In addition to the suggestions for future research brought out in the individual article summaries, a look at the combined results expands the possibilities. The most evident potential for additional study lies within the empty factors. The absence of findings within several of the factors, specifically Transgenerational Family Characteristics, Problem Context, and Problem Perception, discloses certain theoretical perspectives that go unrepresented in this collection of results. For instance, Developmentalists might inquire into the cross-generational transmissions that set the stage for the observed effects of the various family factors. Phenomenologists might point to the need to ask the couple their views on the importance of marital quality, the mutuality they feel in working toward marital quality and so on. Finally, Ecologists might be interested in learning more about the environmental setting in which these families find themselves and how this broader context influences their marital quality.

This example demonstrates the model's ability to bring together a group of studies in an organized, coherent manner. As has been shown, research findings can be located within the model. By applying the findings to the organizing model, implications of the results, direction for further research, and potentially missing factors and theoretical perspectives become more visible.
CONCLUSION

This paper has described an organizing model of family problem solving interaction. The model represents an answer to the call for a method of integrating and managing the increasingly complex and far ranging interests of family scholars and practitioners (Klein and Tholin, 1990; Nye, 1988; Sprey, 1988, 1990).

By locating the results of a collection of studies on marital quality within the model, the usefulness of the model was exemplified. This model can pull together a variety of information and perspectives, organize them into a map of family interaction, and give a much needed, fuller picture of family behavior. Through the model’s visual presentation, interpretation and evaluation of both individual studies and groups of studies becomes easier. The implications of findings, suggestions for further study and potentially important but under-represented concepts and theoretical perspectives all become more evident.

A model of this nature can also find practical application in numerous family disciplines. For example, a family therapist could utilize the model when designing an intervention strategy. Resource management specialists might find it useful when identifying areas of difficulty for a particular family. A public policy analyst could apply the model when anticipating the impact of a public program on different groups of families.

In order to realize its full potential, this model will benefit from several forms of future evaluation and application. The scope and limits of its usefulness must be ascertained through the continued mapping of varied areas of interest. The linkages between factors and the dimensions assigned to each factor must be tested. Theoretical, research-based and practical applications must also be analyzed. While the author is currently engaged in this process, additional perspectives and perceptions will broaden the understanding and usefulness of the model.
REFERENCES


APPENDIX

Concept Definitions and Operationalizations

This appendix contains several sets of definitions. The first listing contains basic definitions underlying the development of the model. Primary assumptions follow the basic definitions. The remainder of the appendix provides definitions for each of the model's factors along with the factor's suggested dimensions and their definitions. The dimensions included with each factor are not meant to imply they alone describe the factor. Both the dimensions and their definitions are provided as examples in the hope of further clarifying their assigned factor.

Basic Definitions

**Family**: Two or more persons related by blood, adoption, marriage or commitment who live in the same household.

**Family Problem**: A situation involving an unachieved but potentially attainable family goal. The means for reaching the family goal are not immediately apparent but are considered feasible.

**Family Goal**: An unachieved yet potentially attainable state of affairs.

**Family Problem Solving**: Family interactions directed toward achieving a family goal.

**Family Solution**: A means for reaching a family goal.

**Means**: A family plan for using or obtaining the resources necessary for family goal attainment.

Basic Assumptions

1. Most families wish to solve their problems effectively.
2. Most families take active steps to resolve their problems.
3. Families vary in their problem solving effectiveness.
4. Family problem solving effectiveness is influenced by many variables.
Family Problem Solving Effectiveness:

**Family Problem Solving Effectiveness:** The extent to which the family's chosen solution receives acceptance from family members and brings about the desired outcome.

1. **Solution Acceptance:** The extent to which the solution receives approval from all family members.
2. **Solution Quality:** The extent to which the solution achieves the desired outcome.

Family Problem Solving Interaction:

**Family Problem Solving Interaction:** The behaviors of family members as they attempt to solve a family problem.

1. **Amount of verbal communication:** The amount of talking among family members that occurs during family problem solving.
2. **Distribution of verbal communication:** The extent to which talking is dispersed among family members during family problem solving.
3. **Amount of creativity:** The number of solutions suggested.
4. **Distribution of creativity:** The extent to which solution suggestions are dispersed among family members during family problem solving.
5. **Amount of communication skills:** The extent to which the family utilizes a variety of linguistic expressions during problem solving.
6. **Distribution of communication skills:** The extent to which the variety of linguistic expressions during problem solving are distributed among family members.
7. **Amount of support:** The extent to which positive affect is transmitted among family members during family problem solving.
8. **Distribution of support:** The extent to which the positive affect which is transmitted among family members during family problem solving is dispersed among family members.
9. **Amount of nonverbal communication:** The number of gestural cues transmitted among family members during family problem solving.

10. **Distribution of nonverbal communication:** The extent to which gestural cues are distributed among family members during family problem solving.

11. **Amount of issue-oriented conflict:** The extent to which family members express disagreements related to the problem during family problem solving.

12. **Distribution of issue-oriented conflict:** The extent to which disagreements related to the problem are dispersed among family members during family problem solving.

13. **Amount of personality-oriented conflict:** The extent to which family members make hostile, coercive, demeaning, etc. expressions to one another during family problem solving.

14. **Distribution of personality-oriented conflict:** The extent to which hostile, coercive, demeaning, etc. expressions are dispersed among family members during family problem solving.

15. **Coordinative leadership:** The extent to which leadership facilitates family problem solving.

16. **Phasing rationality:** The orderliness with which the family progresses through the problem solving process.

17. **Centralization of power:** The degree to which influence over the outcome of family problem solving is concentrated in a family member or subgroup.

18. **Legitimate power:** The extent to which power during family problem solving conforms to normative expectations of power within families.

19. **Expert power:** The extent to which leadership during family problem solving is concordant with situationally relevant skills, knowledge, or experiences, as opposed to achieved traits such as age, gender, or generational status.
**Problem Characteristics**

1. **Effort:** The amount of effort required to solve the problem; the number of operations.

2. **Complexity:** Skills or types of knowledge required to solve a problem.

3. **Solution multiplicity:** The number of possible solutions to a problem; the number of means for attaining solutions to a problem; the difficulty of verifying a solution as correct.

4. **Conjunctivity:** The degree of coordination, cooperation, or integrated action family members must engage in to solve the problem.

5. **Pervasiveness:** The number of families affected by a problem. (Does everyone experience this same problem?)

6. **Cognitive requirements:** The ratio of abstract to concrete reasoning skills required for solving the problem.

7. **Manual requirements:** The amount of physical exertion required to solve the problem.

8. **External-internal source:** A problem imposed by an outside force versus one which is self-imposed by the family or one of its members.

9. **Requisite time:** The amount of time required to solve a problem, ranging from an immediate response to a series of responses over an extended period of time.

10. **Object barrier:** The presence of a material object or its symbolic representation which thwarts problem solving success.

11. **Interpersonal barrier:** The presence of an interpersonal relationship which thwarts problem solving success.

12. **Rule-boundedness:** The degree to which explicit and available procedures help or hinder problem solving success.

13. **Control:** The degree to which the family can influence the course of events leading to the outcome of the problem.
Problem Perception

Problem perception: The family's perception of the problem.

1. Goal importance: The amount of value the family places on resolving the problem.
2. Difficulty: The extent to which the family views the problem as hard to solve.
3. Mutuality: The extent to which the family believes all family members are committed to solving the problem.
4. Threat: The extent to which the family views the problem as psychologically or physically harmful.
5. Uncertainty: The degree of doubt the family feels about such things as each other's commitment to the family as a group, individual family relationships and/or the means to solve the problem.

Problem Context

Problem Context: Aspects of the environment outside the family system which provide resources or hindrances for the family problem solving process.

1. Public and private institutions: Government agencies and programs, churches, health care providers, schools, etc. with which the family interacts.
2. Social networks: Extended family, friends, community contacts, etc. with which the family interacts.
3. Culture: The set of societal norms, mores, customs, etc. within which the family functions.
4. Environment: The physical surroundings in which the family is functioning.
Family Interaction Characteristics

**Family Interaction Characteristics**: Organizational features of the family which exist prior to the onset of family problem solving interaction.

1. **Values, norms**: The beliefs, expectations, and standards the family holds regarding appropriate and desirable interaction behaviors.

2. **Family style**: The family's habitual or set patterns of interacting with their environment, one another and/or particular situations.

3. **Parenting style**: The parents' habitual or set patterns of guiding or controlling the behaviors of the family's children.

4. **Developmental flexibility**: The ability of the family to alter its interaction patterns in response to the changing characteristics of its members over their individual life cycles.

Member Characteristics

**Member Characteristics**: The skills and competencies which family members possess.

1. **Cognitive development**: The extent to which a family member can process information, use information-processing rules, and deal with abstract concepts.

2. **Problem solving motivation**: The family member's readiness to pursue collective goals.

3. **Self-esteem**: The extent to which a family member feels a personal sense of worth.

Family Resource Characteristics - Human

**Family Resource Characteristics - Human**: Family members' skills, experiences, etc. available to the family for use in solving a problem.

1. **Level of problem solving competencies**: The amount of problem solving skill exhibited by family members.

2. **Homogeneity of problem solving competencies**: The extent to which problem solving skills are evenly distributed among family members.
3. **Level of experience**: The amount of educational experience, job experience, past problem solving experiences, etc. held by family members.

4. **Homogeneity of experience**: The extent to which family members share similar educational experience, job experience, past problem solving experience, etc.

*Family Resource Characteristics - Material*

**Family Resource Characteristics - Material**: Money, means, tools, etc. available to the family for use in solving a problem.

1. **Income**: The family's yearly monetary income.

2. **Time**: The amount of unappropriated time available to family members for problem resolution.

3. **Tools**: The instruments, utensils, and implements available to family members for problem resolution.

*Family Demographic Characteristics*

**Family Demographic Characteristics**: Statistical descriptors of the family.

1. **Homogeneity of age**: The extent to which family member ages are similar.

2. **Homogeneity of gender**: The sex ratio in the family.

3. **Family life cycle stage**: A relatively distinct period on the family's career demarcated by significant changes in the normative content of family member roles.

4. **Family size**: The number of members in the family.

*Transgenerational Family Characteristics*

**Transgenerational Family Characteristics**: Aspects of their family of origin which parents bring forward into their primary family.

1. **Family paradigm**: The family's particular style of interacting with their environment.

2. **Particularism**: The extent to which family relationships preserve the integrity of family members.
3. **Unresolved issues:** The extent to which lack of differentiation, transgenerational triangling, etc. influence family behavior.

4. **Family Resources:** Family income, tools, experiences, etc. available to the family for use in solving a problem.
PART II. THE EFFECT OF FAMILY PROBLEM SOLVING INTERACTION ON FAMILY PROBLEM SOLVING EFFECTIVENESS
INTRODUCTION

Family problem solving interaction, the behaviors family members engage in while they attempt to solve a family problem, is often seen as the most crucial determinant of family problem solving effectiveness (Klein and Hill, 1979; Rueter, 1989). This statement implies families with members who interact in a certain manner will more likely produce a resolution to their problem than families whose members interact in other ways.

The process of discovering which forms of interaction result in effective solutions to family problems is still in its beginning stages. To date, most studies of family problem solving interaction look at the impact of one or a few variables. For example, Forgatch (1989) split family problems solving interaction into three types of behavior: problem solving oriented behavior, negative emotion, and other. Families engaging in high levels of negative emotion during problem solving were less effective in their problem solving efforts than families showing less negative interaction.

Sorrels and Myers (1983) combined the study of certain aspects of family style with the affective content of a family's problem solving interaction. They too found interaction with a negative tone affected family problem solving effectiveness detrimentally. In addition, their results suggest rigidity in the form of intolerance to conflicting ideas, pressures to conform, etc., reduces a family's ability to achieve problem resolution.

The variable of interest for Blechman and McEnroe (1985) was communication skills. Their results indicate that families with members who communicate effectively do better at solving their problems than families with less competent communicators.

While each of these studies adds significantly to our knowledge of the effect of certain types of interaction on family problem solving effectiveness, numerous variables remain untested. Klein and Hill (1979) evince the potential for future study in their theory of family problem solving effectiveness. They identify seventeen components of problem solving
interaction. The types of interaction Klein and Hill list not only cover affective dimensions and family communication skills, they also include verbal and nonverbal behavior, leadership variables, phasing rationality and several power dimensions.

Klein and Hill (1979) expect each of these aspects of family problem solving interaction to influence a family's ability to solve a problem effectively. In addition, they believe these variables form causal relationships among themselves. When attempting to propose relationships between the family problem solving interaction variables, Klein and Hill noted the complexity of such an undertaking. Both the large number of influential variables and the potential for combined and interaction effects increased the difficulty of their task.

The work of Klein and Hill (1979) suggests a research direction. Their long list of interaction variables and recognition of the involved relationships between those variables serve to remind students of family problem solving that no form of interaction occurs in isolation. In order to best learn about family problem solving interaction and its influence on a family's ability to solve their problems, studies must consider several interaction variables simultaneously. By doing so, the combined and interaction effects of those variables can be better observed, and a more veracious picture of family problem solving interaction can be obtained.

This study proposes to undertake the task of testing the interrelationships between several family problem solving interaction variables as they influence family problem solving effectiveness. The aspects of family problem solving interaction to be considered in this study are defined in Table 1. Each of these variables is adapted from the list of interaction variables developed by Klein and Hill (1979).

*Developing the Theoretical Equations.*

The identification of hypothetical influences follows from guidance found in theoretical writings and studies on family problem solving interaction. The following discussion
TABLE 1. VARIABLE DEFINITIONS, OPERATIONALIZATIONS, AND RELIABILITIES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variable Definitions</th>
<th>Operationalizations</th>
<th>Reliabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution acceptance</td>
<td>The extent to which the solution receives approval from family members.</td>
<td>Scale: Family report of extent to which they believe their solution will solve the problem and they will do their solution.</td>
<td>α=.81</td>
</tr>
<tr>
<td>Solution quality</td>
<td>The extent to which the solution will achieve the desired outcome.</td>
<td>Observer rating of family's highest quality solution.</td>
<td>r=.74</td>
</tr>
<tr>
<td>Amount of creativity</td>
<td>The number of solutions suggested during family problem solving.</td>
<td>Observer count of the number of solutions suggested.</td>
<td>r=.87</td>
</tr>
<tr>
<td>Amount of verbal interaction</td>
<td>The amount of talking among family members during family problem solving.</td>
<td>Scale: Observer rating of each member's amount of talking.</td>
<td>α=.70  r=.69</td>
</tr>
<tr>
<td>Amount of nonverbal interaction</td>
<td>The number of gestural cues transmitted among family members during family problem solving.</td>
<td>Scale: Observer rating of each member's amount of facial and bodily movements.</td>
<td>α=.73  r=.67</td>
</tr>
<tr>
<td>Amount of communication skills</td>
<td>The extent to which family members express themselves in a clear, articulating manner during family problem solving</td>
<td>Scale: Observer rating of each member's ability to share information in an understandable, clear manner.</td>
<td>α=.93  r=.60</td>
</tr>
<tr>
<td>Amount of support</td>
<td>The extent to which positive affect is transmitted among family members during family problem solving.</td>
<td>Scale: Observer rating of each member's warm and supportive expressions to other members.</td>
<td>α=.93  r=.60</td>
</tr>
<tr>
<td>Amount of interpersonal conflict</td>
<td>The extent to which family members make hostile, coercive, demeaning, etc. expressions to one another during family problem solving.</td>
<td>Scale: Observer rating of each member's hostile, critical, or angry expressions to other members.</td>
<td>α=.89  r=.70</td>
</tr>
<tr>
<td>Coordinative leadership</td>
<td>The extent to which family members engage in leadership behaviors that facilitate the family problem solving process.</td>
<td>Scale: Observer rating of each member's ability to encourage on-task behavior, gain consensus, negotiate, or otherwise facilitate the problem solving process.</td>
<td>α=.67  r=.69</td>
</tr>
</tbody>
</table>

^Cronbach's alpha  bIntra-class correlation
considers each variable individually. Research findings and theoretical suggestions regarding the ability of each variable to influence different aspects of family problem solving interaction and effectiveness are highlighted. Subsequent to each review the hypothetical influences are stated.

As will become apparent, a diagram of the theoretical model for this study would be rather cumbersome. A list of theoretical equations represent the hypotheses more succinctly. Figure 1 shows the final theoretical equations for each endogenous variable tested in this study.

**Family Problem Solving Effectiveness Variables**

The extent to which a family accepts a solution is one of two widely used indicators of effective problem solving. Several theories (Aldous, 1971; Klein and Hill, 1979; Rueter, 1989), and studies (Blechman and McEnroe, 1985; Forgatch, 1989; Miller, Lefcourt, Holmes, Ware, and Saleh, 1986) utilize solution acceptance as an outcome variable. In each case, solution acceptance is given the most endogenous model placement. For this study, therefore, solution acceptance is hypothesized to be the primary outcome variable.

The extent to which a family arrives at a solution that will actually solve the problem, solution quality, is the second commonly used measure of family problem solving effectiveness (Aldous, 1971; Blechman and McEnroe, 1985; Forgatch, 1989; Klein and Hill, 1979; Miller et al., 1986; Rueter, 1989; Sorrels and Meyers, 1983; Straus, 1968). Many family problem solving researchers and theorists employ solution quality and solution acceptance simultaneously to indicate family problem solving effectiveness (Aldous, 1971; Blechman and McEnroe, 1985; Forgatch, 1989; Klein and Hill, 1979). No causal relationship between the two is drawn. Miller et al. (1986) represent a break in this pattern. In the Miller et al. study, solution quality predicts solution acceptance. Considering this finding, solution quality is hypothesized to influence solution acceptance in a positive manner.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Solution Quality</th>
<th>Creativity</th>
<th>Verbal Interaction</th>
<th>Nonverbal Interaction</th>
<th>Communication Skills</th>
<th>Support</th>
<th>Conflict</th>
<th>Coordinative Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution Acceptance</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>?</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Solution Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Creativity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Verbal Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Nonverbal Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Communication Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
Family Problem Solving Interaction Variables

Amount of creativity. Amount of creativity appears to be the interaction variable with the closest influence on family problem solving effectiveness, both in terms of solution acceptance and solution quality. Several theories predict a direct causal relationship between amount of creativity and problem solving effectiveness (Aldous 1971; Klein and Hill, 1979; Rueter, 1989; Tallman, 1970; Turner, 1970). Blechman and McEnroe's (1985) findings give statistical support to the positive influence of amount of creativity upon solution quality.

All but one of the previously cited theories suggest a positive effect of amount of creativity upon solution acceptance. Rueter (1989) provides the one exception. With the following reasoning, Rueter proposes amount of creativity influences solution acceptance in a negative manner: When amount of creativity is measured in terms of the number of solutions offered, and the number of solutions suggested is high, individual family members are more likely to favor different solutions. If, on the other hand, a family can only identify one or a few solutions, family-wide consensus on a single solution seems more likely.

Taking the cited literature into consideration, the following hypothetical relationships are proposed for the effect of amount of creativity:

(a) Amount of creativity positively influences solution quality.

(b) Amount of creativity negatively influences solution acceptance.

Amount of verbal and nonverbal interaction. Several theories predict both verbal and nonverbal interaction will directly affect both solution acceptance and solution quality (Aldous, 1971; Cohen, 1974; Klein and Hill, 1979; Rueter, 1989; Straus, 1968). These theories do not, however, agree on the role of verbal versus nonverbal interaction in family problem solving.

Work done by both Straus (1968) and Cohen (1974) suggests families with low verbal skills will resort to the use of nonverbal skills. These two writers propose that families using verbal interaction more than nonverbal will more effectively solve their problems.
Aldous (1971), on the other hand, asserts that verbal and nonverbal behavior are both forms of communication. According to Aldous, an effective communicator utilizes both verbal and nonverbal behavior to impart information.

In either case, both verbal and nonverbal interaction are hypothesized to directly influence both solution quality and solution acceptance. The identified hypothetical relationships are as follows:

(a) Amount of verbal interaction positively influences both solution quality and solution acceptance.

(b) Amount of nonverbal interaction directly influences solution quality and solution acceptance, although the valence of this relationship cannot be predicted at this time.

Amount of communication skills. The number of family problem solving theories making some reference to amount of communication skills attests to the importance of this variable in both family problem solving effectiveness and interaction (Aldous, 1971; Cohen, 1974; Klein and Hill, 1979; Rueter, 1989; Steinhauer, 1987; Straus, 1968; Tallman, 1970; Turner, 1970). Three studies also bear witness to the significance of this variable in family problem solving (Blechman and McEnroe, 1985; Miller, et al., 1986; Straus, 1968).

From this literature, a number of hypotheses can be identified. First, in several instances amount of communication skills is given a direct and positive relationship to both solution acceptance and solution quality (Aldous, 1971; Blechman and McEnroe, 1985; Klein and Hill, 1979; Miller et al., 1986; Rueter, 1989; Steinhauer, 1987). Turner (1970) and Tallman (1970) add the suggestion that amount of communication skills positively influences the amount of creativity. Still others indicate a positive effect of communication skills on verbal interaction (Steinhauer, 1987) and a negative effect on amount of nonverbal interaction (Cohen, 1974; Straus, 1968).
The hypothetical relationships drawn from this information include the following:

(a) Amount of communication skills positively influences both solution acceptance and solution quality.

(b) Amount of communication skills positively influences amount of creativity.

(c) Amount of communication skills positively influences amount of verbal interaction.

(e) Amount of communication skills negatively influences amount of nonverbal interaction.

Amount of support. The amount of support present during family problem solving interaction receives attention from several sources (Aldous, 1971; Klein and Hill, 1979; Rueter, 1989; Steinhauer, 1987; Straus, 1968; Tallman, 1970; Turner, 1970). The majority of family problem solving theories expect amount of support to positively affect family problem solving effectiveness (Klein and Hill, 1979; Rueter, 1989; Straus, 1968; Tallman, 1970). Both Klein and Hill (1979) and Tallman (1970) predict a positive relationship between amount of support and amount of creativity. Klein and Hill predict a positive effect of amount of support on amount of verbal interaction. Aldous (1971) expects amount of support to positively influence both verbal and nonverbal interaction. Finally, Steinhauer (1987) points to the possibility of a positive relationship between amount of support and communication skills.

In consideration of this theoretical guidance, the following hypotheses are offered:

(a) Amount of support positively influences solution acceptance.

(b) Amount of support positively influences solution quality.

(c) Amount of support positively influences amount of creativity.

(d) Amount of support positively influences amount of verbal interaction.

(e) Amount of support positively influences amount of nonverbal interaction.

(f) Amount of support positively influences amount of communication skills.
Amount of interpersonal conflict. The amount of interpersonal conflict also receives extensive attention in the family problem solving literature (Aldous, 1971; Forgatch, 1989; Klein and Hill, 1979; Miller et al., 1987; Rueter, 1989; Tallman, 1970; Turner, 1970; Sorrels and Myers, 1983; Steinhauer, 1987). Of these theories, three predict an inverse relationship between amount of interpersonal conflict and family problem solving effectiveness (Klein and Hill, 1979; Rueter, 1989; Turner, 1970). The findings of three studies lend support to this prediction (Forgatch, 1989; Miller et al., 1987; Sorrels and Myers, 1983). Aldous (1971) and Tallman (1970) suggest amount of interpersonal conflict also inversely influences amount of creativity. Klein and Hill (1979) predict a positive relationship between amount of interpersonal conflict and the amount of both verbal and nonverbal interaction and a negative relationship between amount of nonverbal interaction and amount of communication skills.

The following hypotheses resulted from this information:

(a) Amount of interpersonal conflict negatively influences both solution acceptance and solution quality.

(b) Amount of interpersonal conflict negatively influences amount of creativity.

(c) Amount of interpersonal conflict positively influences both amount of verbal interaction and amount of nonverbal interaction.

(d) Amount of interpersonal conflict negatively influences amount of communication skills.

Coordinative Leadership. Coordinative leadership receives primarily theoretical attention in the family problem solving literature (Aldous, 1971; Klein and Hill, 1979; Rueter, 1989; Steinhauer, 1987). Of these theorists, three expect amount of coordinative leadership to positively influence problem solving effectiveness (Aldous, 1971; Klein and Hill, 1979; Rueter, 1989). Both Klein and Hill (1979) and Steinhauer (1987) predict three additional relationships. They expect amount of coordinative leadership to positively influence amount of
communication skills, to positively influence amount of support, and to negatively influence amount of interpersonal conflict.

Using these theoretical proposals for guidance, the following hypotheses are identified:

(a) Amount of coordinative leadership positively influences both solution acceptance and solution quality.

(b) Amount of coordinative leadership positively influences amount of communication skills.

(c) Amount of coordinative leadership positively influences amount of support.

(d) Amount of coordinative leadership negatively influences amount of interpersonal conflict.

Coordinative leadership, as measured in this study, is a specific form of communication skills. In consideration of this, the following hypotheses are duplicated from those suggested for amount of communication skills:

(e) Coordinative leadership positively influences amount of creativity.

(f) Coordinative leadership positively influences amount of verbal interaction.

(g) Coordinative leadership negatively influences amount of nonverbal interaction.

METHODS

Sample

The sample from which data were collected consisted of 451 white, primarily middle-class families. Each family included two parents, a seventh-grade adolescent, and a sibling who was within four years of age from the seventh-grade child.

These families lived in one of eight adjacent counties located in a midwestern state. Thirty-four percent of the sample families lived on farms. The majority of both fathers and mothers were in the paid labor force; ninety-six percent of the fathers worked outside the home for at least 40 hours per week. Among the mothers, 81 percent were employed at a paying job.
on either a full- or part-time basis. The annual income for the families ranged from $0 to $259,000 with a median of $33,700. The median level of educational attainment for both mothers and fathers in this sample was one year beyond high school. The range for mothers was ninth grade to Master's degree while the range for fathers was eighth grade to Ph.D. Sample fathers ranged in age from 31 to 68 years with a median age of 39 years. Mothers ranged in age from 29 to 53 years with a median age of 37 years. Since the sample is restricted to families with at least two children, the families in this study are larger on average than one would expect to find in a general population survey. Family size ranged from four to 13 members with an average family size of 4.95 members. Each family was paid $250 for their participation in the study. (Each parent received $75, and each child received $50.)

Procedures

The families in this study were recruited through 34 local school systems in eight adjacent counties in a single midwestern state. Eighty-seven percent of the families named by schools were contacted and found to meet the study's eligibility requirements. Of the eligible families, 78.8 percent agreed to participate in the study.

Each family was visited twice in their own home. The study described here made use of data collected during the second visit when family members were videotaped while they engaged in four structured interaction tasks, the second of which was a family problem solving task.

A trained interviewer began the second session by asking each individual to complete a short questionnaire designed to identify current family disagreements or concerns (e.g., issues regarding chores, recreation, money, etc.). After completing this questionnaire, family members were gathered around a table in preparation for the videotaped interaction tasks.

The family problem solving task lasted 15 minutes. During this time, family members discussed and attempted to resolve existing family problems. The interviewer identified three
family problems for the family to discuss from the questionnaires completed by family members earlier in the session. As in all the tasks, the interviewer left the room after asking the family to begin their discussion and returned when the time allotted for the task had elapsed.

Immediately following completion of the problem solving interaction, the interviewer asked the family members to complete a short questionnaire. On this questionnaire, family members indicated the extent to which they were able to solve the problem discussed and how likely the family would be to actually do their solution.

Video-taped family interaction was coded by trained observers using the Iowa Family Interaction Rating Scales (Melby et al., 1989). This coding system is designed to ascertain behavioral characteristics of individual family members and the quality of behavior exchange between family members.

**Measures**

This study employed both observational indices and family report. Table 1 provides the definitions, operationalizations, and reliability scores for each variable. The measures of reliability for the observational ratings were computed using intraclass correlations between reliability and primary coders (Suen and Ary, 1989). Twenty-five percent of the video-taped interactions were independently coded by a second, reliability coder. Comparison of the primary and reliability codings provided the information to compute the level of interobserver agreement.

Several of the variables used in this study represent scales. As a measure of reliability, Cronbach's alpha was computed for each scale. The results of these computations are shown in Table 1.

**RESULTS**

Each of the previously formulated theoretical equations was tested using multiple regression (SPSS-X, 1988). After the initial regression was performed, variables that did not
contribute significantly to the explanation of variance were removed from the equation. The multiple regression procedure was then performed again to obtain the most parsimonious explanation of the relationships among the variables. Table 2 shows the standardized results of the multiple regression.

*The Resultant Equations: Family Problem Solving Effectiveness*

*Solution acceptance.* Solution acceptance was hypothesized to be affected directly by solution quality and all of the problem solving interaction variables. While solution quality produced a significant regression coefficient ($\beta=.15$, $p<.001$), only three of the interaction variables met this expectation. The three influential problem solving interaction variables include amount of creativity ($\beta=-.17$, $p<.001$), amount of interpersonal conflict ($\beta=-.26$, $p<.001$), and amount of coordinative leadership ($\beta=.23$, $p<.001$).

An interaction term also significantly added to the explanation of the variance in solution acceptance. The interaction was between coordinative leadership and amount of interpersonal conflict ($\beta=.11$, $p<.05$). Splitting the range of interpersonal conflict into thirds and regressing solution acceptance on coordinative leadership at the lowest and highest levels revealed the nature of this interaction. At low levels of interpersonal conflict, the influence of coordinative leadership on solution acceptance is small and insignificant. At high levels of interpersonal conflict, the standardized regression coefficient for coordinative leadership increased to .35 and became significant ($p<.001$). These results suggest one way in which families using coordinative leadership skills gain an advantage over families without such skills. It appears that as a problem becomes more conflictual, coordinative leadership becomes increasingly important to the achievement of solution acceptance.

For these data, then, solution quality, amount of creativity, amount of interpersonal conflict and coordinative leadership combine to give the most parsimonious explanation of the variance in solution acceptance. With these variables plus the interaction of coordinative
**TABLE 2. STANDARDIZED MULTIPLE REGRESSION COEFFICIENTS**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Solution Quality</th>
<th>Creativity</th>
<th>Squared Term</th>
<th>Cubed Term</th>
<th>Verbal Interaction</th>
<th>Nonverbal Interaction</th>
<th>Squared Term</th>
<th>Communication Skills</th>
<th>Support</th>
<th>Conflict</th>
<th>Coordinative Leadership</th>
<th>Squared Term</th>
<th>Conflict/Leadership</th>
<th>Conflict/Communication</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution Acceptance</td>
<td>.15**</td>
<td>-.17**</td>
<td>-.05</td>
<td>.02</td>
<td>.08</td>
<td>.06</td>
<td>-.26**</td>
<td>.23**</td>
<td>.11*</td>
<td>.23**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.24**</td>
</tr>
<tr>
<td>Solution Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.26**</td>
<td>-.34**</td>
<td>.34**</td>
<td>-.11**</td>
<td>.11**</td>
</tr>
<tr>
<td>Creativity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.13**</td>
<td>.08</td>
<td></td>
<td></td>
<td>.16**</td>
</tr>
<tr>
<td>Verbal Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.39**</td>
<td>-.08</td>
<td>.32**</td>
<td>-.03</td>
<td>.23**</td>
</tr>
<tr>
<td>Nonverbal Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.05</td>
<td>.17**</td>
<td>.33**</td>
<td>-.11**</td>
<td>.18**</td>
</tr>
<tr>
<td>Communication Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.39**</td>
<td>-.24**</td>
<td>.26**</td>
<td></td>
<td>.35**</td>
</tr>
<tr>
<td>Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.44**</td>
<td></td>
<td></td>
<td></td>
<td>.20**</td>
</tr>
</tbody>
</table>

* $p<.05$  ** $p<.01$
leadership and amount of interpersonal conflict entered into the multiple regression equation, 24 percent (p<.001) of the variance in the family's report of solution acceptance is explained.

**Solution Quality.** As was the case with solution acceptance, all of the interaction variables were hypothesized to directly influence solution quality. Of those seven variables, four significantly influenced solution quality. The problem solving interaction variables showing a strong linear relationship to a family's ability to form a high quality solution to their problem include amount of creativity (β=.26, p<.001), amount of verbal interaction (β=-.11, p<.001), amount of nonverbal interaction (β=.12, p<.001), and coordinative leadership (β=.28, p<.001).

These linear coefficients do not, however, tell the whole story with respect to solution quality. Several curvilinear relationships also added to the explanation of solution quality's variance. Both coordinative leadership and amount of nonverbal interaction proved to be quadratically related to solution quality. Amount of creativity produced a significant cubic relationship.

Through the use of calculus, a clearer picture of these curvilinear relationships was obtained (Berresford, 1989). For each curvilinear relationship, a separate regression was performed. Taking the first and second derivatives of the resulting unstandardized regression formulas, setting the result equal to zero, and solving the equation produced the vertex and inflexion points for each curve. This information, along with analyzing each formula at its end-points, aided in the development of a sketch of, and therefore a more accurate indication of each variable's relationship to solution quality. The following discussion describes the results of this process for each curvilinear relationship.

Amount of creativity, as noted earlier, appears to be cubically related to solution quality. The unstandardized regression equation for the relationship between solution number and solution quality is solution quality = .0022(solution number^3) - .0856(solution number^2)
The elongated, "S"-shaped curve predicted by this formula shows neither minimum nor maximum points. The line enters the domain for solution number and solution quality when solution number equals 4 and solution quality equals 1.99. As Figure 2 shows, the curve rises quickly, then levels off and reaches its inflexion point, the point of increasing returns, at a solution number rating of 13.03 and a solution quality rating of 3.75. The line leaves the domain when solution number climbs to 20 and solution quality is 4.77.

This curve suggests two things about the effect of the solution brainstorming process upon a family's ability to produce high quality solutions. First, and most obvious, families who cannot identify any alternatives, stand a very poor chance of coming up with a good solution. However, once a family begins suggesting even a few solutions, their potential for developing a workable solution improves immediately...Second, after the initial jump in solution quality, it appears a family must amass a number of solution suggestions before the quality of their solution again rises. Perhaps the beginning of solution brainstorming consists of members proposing individual ideas. Once the individual ideas are aired, members are more likely to direct their attention to offering solutions that build upon already presented solutions. In this way solution quality improves with each new "building" solution.

The unstandardized regression formula solution quality = .00381(coordinative leadership^2) - .165(coordinative leadership) + 4.88 predicts the curvilinear relationship between solution quality and coordinative leadership. As shown in Figure 3, a regression line drawn utilizing this equation enters the domain of these two variables when coordinative leadership equals 16 and solution quality equals 3.22. From there the curve drops slightly to its vertex at a coordinative leadership rating of 21.65 and a solution quality rating of 3.09. By the time the line leaves the domain, when coordinative leadership is 36, solution quality has risen to a rating of 3.88.
A reminder of the definition of coordinative leadership helps with the interpretation of this result. Coordinative leadership measures a family's ability to engage in behaviors that facilitate the problem solving process. Such behaviors include initially encouraging family members to identify the nature of the problem and then moving the family along to the discussion of solution alternatives. Families without these skills would likely begin their problem solving by jumping straight into brainstorming solutions, and, as was pointed out earlier, by merely identifying solutions a family can easily reach the mid-range of solution quality. Families with moderately low coordinative leadership skill might begin their problem solving with a discussion of the nature of the problem, but it appears these families may get hung up in the
Coordinative leadership discussion and their ability to devise a good solution suffers. Once a family's coordinative leadership rating moves into the middle and upper ranges, the curve shown in Figure 3 indicates their ability to come up with solutions and sort through them to develop one of good quality improves steadily.

The inclusion of a quadratic term for amount of nonverbal interaction produced a negative coefficient ($\beta = -0.09, p<0.05$). This indicates a relationship between a family's amount of nonverbal interaction and their level of solution quality that diminishes in strength as amount of nonverbal interaction increases.

The situation, however, is not this simple. A regression of solution quality on amount of nonverbal interaction alone produces nonsignificant results, signifying the presence of a
suppressor variable. Theory suggests a form of communication might be the culprit (Aldous, 1971; Cohen, 1974), and coordinative leadership seems the most likely candidate. Performance of ANCOVA confirmed this suspicion (p<.01).

The effect of the suppression and its ability to counterfeit a curvilinear trend in amount of nonverbal interaction's influence on solution quality are depicted in Figure 4. While the slopes for amount of nonverbal interaction at both the high and low levels of coordinative leadership are virtually identical (b=.0144, p<.05 for low and b=.0141, p<.05 for high), the ranges for amount of nonverbal interaction at the high and the low levels of coordinative leadership and the points at which a regression line would enter each range show differences.

At the low level of coordinative leadership, the unstandardized regression equation (solution quality = .0144(amount of nonverbal interaction) + 2.47) predicts a line that enters the range of amount of nonverbal interaction at a solution quality rating of 2.99. On the other hand, the unstandardized regression equation for the high level of coordinative leadership (solution quality = .0141(amount of nonverbal interaction) + 2.47) predicts a line that enters the range of amount of nonverbal interaction more than three-fourths of a rating higher, at solution quality equal to 3.77. This information suggests that amount of nonverbal interaction influences solution quality to the same degree regardless of the extent to which a family employs coordinative leadership. However, families who use a higher level of coordinative leadership in conjunction with nonverbal interaction do gain an advantage in that the quality of their solutions tends to start at a higher rating.

Another look at Figure 4 helps to understand the aforementioned indication of curvilinearity in the relationship between solution quality and amount of nonverbal interaction. The curvilinear relationship appears to be a product of the difference in the ranges of amount of nonverbal interaction at high and low levels of coordinative leadership. The amount of nonverbal interaction seen in families using high levels of coordinative leadership runs from the
FIGURE 4. THE RELATIONSHIP OF AMOUNT OF NONVERBAL INTERACTION TO SOLUTION QUALITY

Note: — Nonverbal interaction, low coordinative leadership. — Nonverbal interaction, high coordinative leadership.

Range for nonverbal interaction, low coordinative leadership. Range for nonverbal interaction, high coordinative leadership.
lowest score for amount of nonverbal interaction, 36, to a rating of about 56. Ratings of
amount of nonverbal interaction for families showing low levels of coordinative leadership tend
to range from about 40 to the highest rating of 69. Thus, when regressing solution quality on
the combined data set (i.e. amount of nonverbal interaction at both the high and low levels of
coordinative leadership), the resulting regression equation would predict a starting point within
the range of families utilizing a high level of coordinative leadership. Moving toward the right,
the introduction of families showing less coordinative leadership and thus lower solution
quality would pull the line downward. By the time the line reaches the top ratings for amount
of nonverbal interaction, the scores of families utilizing a high level of coordinative leadership
no longer influence the predictions, and the line falls down to meet the lower ratings of solution
quality expected for families showing less coordinative leadership.

One final influence on solution quality deserves discussion. Amount of verbal
interaction was hypothesized to influence solution quality in a positive manner. The regression
coefficient produced by these data (β=-.11, p<.001) indicates a negative effect. In this study,
it appears a high degree of talking hindered a family's ability to form an effective solution to
their problem.

All in all, solution quality appears to be most influenced by four of the interaction
variables tested in this study. Combining the linear influence of amount of verbal interaction
and the curvilinear effects of amount of creativity, amount of nonverbal interaction and
coordinative leadership, 40 percent (p<.001) of the variance in solution quality was explained.

The Resultant Equations: Family Problem Solving Interaction

Amount of Creativity. Six interaction variables were hypothesized to directly influence amount
of creativity. All but two of them produced significant regression coefficients. The four that
added significantly to the explanation of the variance in amount of creativity include amount of
verbal interaction ($\beta = .13$, $p < .001$), amount of support ($\beta = -.13$, $p < .001$), amount of interpersonal conflict ($\beta = .22$, $p < .001$), and coordinative leadership ($\beta = .31$, $p < .001$).

As it did with solution quality, coordinative leadership appears to affect amount of creativity in a curvilinear manner, and, once again, the use of calculus facilitates a closer look at this relationship. The standardized regression formula is solution number $= .0159(\text{coordinative leadership}^2) - .82(\text{coordinative leadership}) + 19.87$. The curve predicted by this equation enters these variables' domain when coordinative leadership is rated 16 and solution number is rated 10.82. The vertex for this curve, its lowest point, occurs when coordinative leadership reaches 25.79 and solution number is at 9.29. The line leaves the domain when coordinative leadership equals 36 and a family's solution number rating is 10.96. Figure 5 shows the relationship between solution number and coordinative leadership.

The explanation of this curvilinear relationship follows reasoning similar to that introduced in the interpretation of the relationship between coordinative leadership and solution quality. Families low in coordinative leadership would likely begin proposing solutions quickly and thus build up a larger number than families who take problem solving time to discuss the nature of the problem. Families rated in the higher ranges of coordinative leadership would likely move into the solution-suggesting phase of problem solving. Once there, the family's greater skills of coordination would help to reduce the potential for spending an extended amount of time generating an excessive number of solutions.

The valences of the regression coefficients for both amount of support ($\beta = -.13$, $p < .001$) and amount of interpersonal conflict ($\beta = .22$, $p < .001$) defied theoretical predictions. These results could be indicative of the amount of importance the family attaches to the problem. A highly conflictual, and thus less supportive problem solving atmosphere could point to a very salient problem. The more pressing the problem, the more likely a family will be to attend to it by developing possible solutions. On the other hand, a less urgent problem
would likely result in a more pleasant problem solving atmosphere and less attention to
discovering a workable solution.

For these data, it appears the best explanation of the variance in amount of creativity is
contained in the combination of amount of verbal interaction, amount of support, amount of
interpersonal conflict and coordinative leadership. When regressed on amount of creativity, this group of variables explains 16 percent (p<.001) of the variance in amount of creativity. Amount of verbal interaction. Two of the four interaction variables hypothesized to directly influence amount of verbal interaction produced significant regression coefficients. Amount of communication skills ($\beta=.33$, p<.001), and amount of interpersonal conflict ($\beta=.28$, p<.001), each proved important in this equation.

The results also suggest the need to consider an interaction between amount of communication skills and amount of interpersonal conflict ($\beta=-.16$, p<.001). Further analysis reveals a differential effect of amount of communication skills on amount of verbal interaction at high and low levels of interpersonal conflict. For families scoring in the lowest one-third on interpersonal conflict, amount of communication skills appears to hold considerable influence on the amount of verbal interaction ($\beta=.54$, p<.001). At the highest levels of interpersonal conflict, however, this standardized regression coefficient drops to .08 (p>.05). Thus it appears the ability of communication skills to encourage verbal involvement from family members is highly susceptible to detrimental effects from interpersonal conflict.

Overall, amount of communication skills, amount of interpersonal conflict and the interaction between these two variables appears to give the most parsimonious explanation of the variance in amount of verbal interaction. When these three terms are used in the multiple regression equation, 23 percent (p<.001) of the variance in amount of verbal interaction is explained.

Amount of nonverbal interaction. Of the four interaction variables hypothesized to directly influence amount of nonverbal interaction, three proved important in this equation. Amount of support ($\beta=.17$, p<.001), and amount of interpersonal conflict ($\beta=.33$, p<.001), as predicted, showed positive relationships to amount of nonverbal interaction. Also as predicted, coordinative leadership appears to inversely influence the amount of nonverbal interaction ($\beta=$
Taken together, these three variables explained 18 percent (p<.001) of the variance in amount of nonverbal interaction.

These results suggest both the affective environment and the family's level of problem solving skills affect the amount of nonverbal interaction. For example, a supportive comment may increase the likelihood of a smile from another family member. In similar fashion, a hostile remark improves the chances for physical agitation in its recipient. The negative influence of coordinative leadership on the amount of nonverbal interaction suggests families low on coordinative leadership show more nonverbal interaction. This seems to indicate a compensatory move. Families lacking in coordinative leadership appear more likely to engage in nonverbal interaction.

**Amount of communication skills.** The hypothesized relationships for amount of communication skills appear to be accurate. All three variables expected to influence amount of communication skills proved significant, and all three standardized regression coefficients are in the expected direction. Amount of support showed a strong positive relationship (β=.39, p<.001). Amount of interpersonal conflict inversely affected amount of communication skills (β=-.24, p<.001). Finally, coordinative leadership appears to positively affect a family's use of communication skills (β=.26, p<.001). Thus, a warm, well coordinated problem solving environment allows for improved communication while a hostile, negative atmosphere inhibits communication. Taken together, these three variables explain more than one-third (35 percent, p<.001) of the variance in amount of communication skills.

**Amount of support and amount of interpersonal conflict.** Both amount of support and amount of interpersonal conflict were hypothesized to be influenced by coordinative leadership. Only one of the hypothesized relationships reached significance. Coordinative leadership appears to negatively influence the amount of interpersonal conflict (β=-.44, p<.001). Twenty percent of
the variance (p<.001) in amount of interpersonal conflict is explained by a family's level of coordinative leadership.

The expected positive influence of coordinative leadership upon amount of support proved minimal (β=.04) and not significant at the .05 level. The amount of variance in a family's level of support that was explained by coordinative leadership also proved insignificant (R²=.002).

According to these results, strong problem solving leadership within a family helps to reduce tension and hostility during the problem solving interaction. Coordinative leadership during problem solving apparently does not affect a family's expressions of warmth and supportiveness.

DISCUSSION

This study has considered the influence of several family problem solving variables on family problem solving effectiveness. As anticipated, the interrelationships among these variables is complex. The following discussion interprets the results in terms of their implications for family problem solving theory, future research, and their usefulness for family practitioners. Concluding remarks will describe the limitations of these results.

Implications for Family Problem Solving Theory

The findings of this study help to support or disconfirm several of the theoretical proposals described earlier. Those to be discussed here include the role of nonverbal interaction in family problem solving, the ability of communication skills to impact positively on other problem solving variables, and the influence of amount of creativity upon solution acceptance.

Three theorists in particular have wrestled with the role of nonverbal interaction in family problem solving. Straus' (1968) work suggests nonverbal interactors experience less success in problem solving. Cohen's (1974) theory adopts a similar stance regarding the
usefulness of verbal versus nonverbal interaction. Aldous (1971), taking a different view of verbal and nonverbal interaction, sees them as two parts of a complete exchange of information. Good communicators, she says, will use both forms of interaction.

While this study can give little response to Aldous' (1971) proposals, it can provide some indication of why, as Straus (1968) and Cohen (1974) suggest, families showing high amounts of nonverbal communication tend to experience lower problem solving success.

The findings from this study indicate nonverbal interaction does play a part in family problem solving effectiveness. However, it appears the role is limited to a positive influence on the quality of a family's solution. Compare this constricted role to that of coordinative leadership, a verbal interaction skill. Over and above higher solution quality, a coordinated family is more able to encourage communication, creativity and solution acceptance, and reduce conflict during the problem solving process. Consider also the negative relationship between coordinative leadership and amount of nonverbal interaction. This relationship suggests families lacking coordinative leadership skills resort to the use of nonverbal interaction. By doing so, nonverbal families severely restrict their ability to influence the problem solving process and thus limit their potential for a successful outcome.

Numerous theories propose a positive and pervasive effect of communication skills on the family problem solving process (Aldous, 1971; Cohen, 1974; Klein and Hill, 1979; Rueter, 1989; Steinhauer, 1987; Straus, 1968; Tallman, 1970; Turner, 1970). The results of this study indicate it is not communication skills per se that possess the ability to widely influence family problem solving. The extent to which coordinative leadership stole the show from amount of communication skills suggests communication skills specifically attuned to facilitating the family problem solving process provide the most pervasive positive influence.

Several theories predict amount of creativity will positively influence solution acceptance (Aldous 1971; Klein and Hill, 1979; Tallman, 1970; Turner, 1970). Rueter (1989),
however, suggested a large number of alternatives reduces a family's ability to agree on one solution. The results of this study appear to support this later claim. The negative relationship between amount of creativity and solution acceptance indicates a family is less likely to agree on a single solution when many solutions have been suggested.

**Implications for Future Research**

Considering the limited amount of research on family problem solving interaction, each study done possesses strong potential for guiding subsequent research efforts. This one is no exception. The outcome of this study provide guidance in terms of the number and the kinds of variables to be considered in the future.

The complexity of the relationships found in these results give credence to the call for considering a variety of behaviors in models predicting family problem solving effectiveness. The interaction effects, suppressor effects, and mediated relationships would not likely reveal themselves in a less specified model.

Also, the type of variable considered appears to be of importance. For example, several aspects of this study's findings demonstrate the importance of separating solution quality and solution acceptance as indicators of family problem solving effectiveness. First, in agreement with Miller et al. (1986), solution quality was found to be a predictor of solution acceptance. In addition, the two variables appear to be influenced by different behaviors in different manners. Interpersonal conflict and solution quality influence solution acceptance. Verbal and nonverbal interactions affect solution quality but not solution acceptance. When the same variable contributed to both solution quality and solution acceptance, the influences were different. Creativity, for instance, showed a negative effect on solution acceptance and a positive, curvilinear effect on solution quality. Coordinative leadership showed a linear relationship with solution acceptance, yet it influenced solution quality in a curvilinear manner.
The type of behavior observed also seems to be of importance when studying family problem solving interaction. Although several theories and studies suggest the importance of communication skills in the family problem solving process (Aldous, 1971; Blechman and McEnroe, 1985; Cohen, 1974; Klein and Hill, 1979; Miller, et al., 1986; Rueter, 1989; Steinhauer, 1987; Straus, 1968; Tallman, 1970; Turner, 1970), this study found amount of communication skills to be of limited influence. A form of communication specific to problem solving, coordinative leadership, appears to have taken the wind out of the more generalized variable, communication skills. Future studies may wish to continue to differentiate between behaviors with specific application to the problem solving process and those of a more generalized nature.

Implications for Practice

In practice, family problems and a family's ability to solve their problems are of vital concern. Several aspects of these findings suggest ways in which families can improve their problem solving ability. The results indicating the limiting role of nonverbal interaction, the need for specific communication skills, and the pervasive, detrimental effects of interpersonal conflict on problem solving interaction point to areas where improvements could be focused.

In this study, nonverbal interaction positively influenced the problem solving process but only to a limited extent. The addition of coordinative leadership to the skill repertoire of nonverbal families could reap multiple benefits. Families helped in this manner could capitalize on their ability to produce good quality solutions, and they could gain the overall positive effects coordinative leadership shows on the family problem solving process.

This same type of situation holds for families showing good general communication skills. The localized effect of communication skills on the problem solving process suggests communication skills alone are not enough to facilitate family problem solving. Families who
learn communication skills directly relevant to problem solving, e. g., coordinative leadership skills, could greatly enhance the scope of their problem solving effectiveness.

Finally, interpersonal conflict presented itself as a primary block to the achievement of solution acceptance. It appears families who engender hostility and the potential for vengeful undermining of a solution jeopardize their problem solving effectiveness. Families able to reduce the amount of conflict and tension in their problem solving interaction will likely see wider acceptance of their solution and therefore experience improved problem solving success.

**Limitations**

The generalizability of this study's findings are limited both by the scope of the family types studied and by the kinds of problems families attempted to resolve. The sample families were primarily white, middle-class families. More importantly, all families included two parents, an adolescent, and at least one other child. Thus the results of this study are limited to families larger than average and families showing a more traditional, two-parent structure. Future research would add greatly to the information obtained here by considering a range of family forms.

Also, the type of problems studied in this research suggest a limitation. Although families were free to identify any of a number of family problems, most identified situations in which the parents were pitted against the children in an effort by the parents to gain child compliance. Typical problems included the parents trying to convince the children to do their homework, or help with household chores, or tone down sibling fights. Many other kinds of family problems certainly exist, and research covering the range of problem-types could broaden the existing knowledge of family problem solving interaction.
REFERENCES


SUMMARY AND CONCLUSIONS

The articles prepared for this dissertation are aimed at alleviating a growing need within the field of family studies. By several accounts, the study of families is expanding (cf. Booth, 1990; Klein and Tholin, 1990; Nye, 1988; Sprey, 1988, 1990; Sussman and Steinmetz, 1987). Along with the obvious benefits of improved knowledge, the enlarged field of inquiry and increasingly intricate research plans bring the threat of disconnectedness and disorganization among family scholars and practitioners (Klein and Tholin, 1990; Nye, 1988; Sprey, 1988).

The model described in Part I represents a response to the need for an organizing system. This model claims to possess three beneficial attributes. First, it encompasses the factors influential to family problem solving interaction and described the linkages between those factors. Second, the organizing model provides a foundation from which effective research plans can be devised. Finally, by mapping results on to the model, future routes of inquiry become more apparent.

The analysis reported in Part II initiated the process of testing the credibility of the organizing model in terms of these three attributes. The factor linkages assessed in this study were those between certain dimensions from the Family Problem Solving Interaction factor and the dimensions of Family Problem Solving Effectiveness. This first test proved successful in that each of the variables identified by the model was found to play a role in Family Problem Solving Interaction as it influences Family Problem Solving Effectiveness.

The organizing model prompted an effective research design for this study, and thus exemplified its usefulness in terms of the second attribute. The identification of the variables to test and their potential relationships were both informed through use of the model. More importantly, the design utilized represents an improvement in the ability of family researchers to discover the determinants of family problem solving effectiveness. Previous research
identified one or a few variables with possible impact on family problem solving. Contemplation of the organizing model helped to identify numerous potentially significant variables. The interactiveness of the results testify to the importance of taking this sort of full-range view when analyzing family interaction.

Of course one study cannot seal the case for this organizing model. By making use of the third characteristic of the model, that is, its ability to point out avenues for future study, suggestions for further testing can be identified. The most obvious research need is to test the linkages between the remaining factors and their dimensions. In addition, future study must consider a wider variety of families. The interactions of families with various structures and from different socio-economic statuses, ethnicities and nationalities all must be studied and seen to fit within the model before confidence in the model's organizing capacity can be established.

Aside from supporting the efficacy of the organizing model, the analyses presented in this dissertation help to advance the study of families on three fronts. Significant contributions grow out of the implications for family problem solving theory and future research, along with the usefulness of the findings for family practitioners.

This research helps to support or disconfirm three theoretical proposals. First, Straus (1968) and Cohen (1974) suggest, families showing high amounts of nonverbal communication tend to experience lower problem solving success. The results reported in this dissertation suggest families lacking coordinative leadership skills tend to resort to the use of nonverbal interaction. By doing so, nonverbal families severely restrict their ability to influence the problem solving process and thus limit their potential for a successful outcome.

Numerous theories propose a positive and pervasive effect of communication skills on the family problem solving process (Aldous, 1971; Cohen, 1974; Klein and Hill, 1979; Rueter, 1989; Steinhauer, 1987; Straus, 1968; Tallman, 1970; Turner, 1970). The findings of
this study indicate it is not communication skills per se that possess the ability to widely influence family problem solving. The extent to which coordinative leadership stole the show from amount of communication skills suggests communication skills specifically attuned to facilitating the family problem solving process provide the most pervasive positive influence.

Finally, several theories predict amount of creativity will positively influence solution acceptance (Aldous 1971; Klein and Hill, 1979; Tallman, 1970; Turner, 1970). Rueter (1989), however, suggested a large number of alternatives reduces a family's ability to agree on one solution. The results of this study appear to support Rueter's proposition.

This research provides guidance for future research in two areas. First, the complexity of the relationships found in these results give credence to the call for considering a variety of behaviors in models predicting family problem solving effectiveness. The interaction effects, suppressor effects, and mediated relationships would not likely reveal themselves in a less specified model.

The specification of variables and type of family behaviors observed were shown to be important considerations for future research designs. For example, several aspects of these findings demonstrate the importance of separating solution quality and solution acceptance as indicators of family problem solving effectiveness. Also, in spite of numerous predictions of pervasive influence (Aldous, 1971; Blechman and McEnroe, 1985; Cohen, 1974; Klein and Hill, 1979; Miller, et al., 1986; Rueter, 1989; Steinhauer, 1987; Straus, 1968; Tallman, 1970; Turner, 1970), communication skills were found to be of limited consequence to the family problem solving process. The overriding impact of coordinative leadership suggests the need to differentiate between behaviors with specific application to the problem solving process and those of a more generalized nature.

Finally, these findings suggest ways in which practitioners can help families improve their problem solving ability. The most striking implication for practice pertains to the
importance of developing a family's coordinative leadership skills. No other component of family problem solving compared to coordinative leadership in terms of its extended, positive influence on problem solving effectiveness. The development of a family's coordinative leadership abilities could greatly improve their chances of problem solving success.

Another approach to helping families enhance their problem solving effectiveness begins with a recognition of the detrimental effect of conflictual interactions on problem solving success. According to these results, families able to reduce the amount of interpersonal hostility expressed during problem solving would likely improve their chances for a good problem solving outcome.
ADDITIONAL LITERATURE CITED


ACKNOWLEDGEMENTS

This dissertation represents the work of many people. I would like to acknowledge the contribution of at least of few of those people. First, my committee members, Drs. Joyce Mercier, Fred Lorenz, Mack Shelley, Mary Winter, and Dean Beverly Crabtree. These people provided me with an endless supply of guidance and support; they also made the writing of this dissertation fun. The many members of the Iowa Youth and Families Project also deserve my gratitude. The opportunity to use project resources, and the encouragement I received along the way helped immensely in the writing of this dissertation. Finally, I would like to thank Jolene Nelson who can spot a typo a mile away, and who stood by me through aggravation as well as celebration.