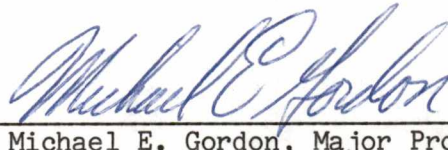


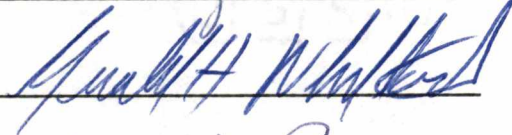
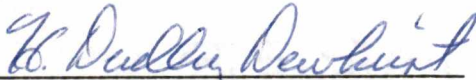
To the Graduate Council:

I am submitting herewith a dissertation written by Walter G. Schneider entitled "The Effects of Research Complexity and Type of Subjects on the Results of Laboratory Research in the Field of Union-Management Relations." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Industrial and Organizational Psychology.



Michael E. Gordon, Major Professor

We have read this dissertation
and recommend its acceptance:



Accepted for the Council:



Vice Chancellor
Graduate Studies and Research

THE EFFECTS OF RESEARCH COMPLEXITY AND TYPE OF SUBJECTS
ON THE RESULTS OF LABORATORY RESEARCH IN THE FIELD
OF UNION-MANAGEMENT RELATIONS

A Dissertation
Presented for the
Doctor of Philosophy
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The University of Tennessee, Knoxville

Walter G. Schneider

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celebrated with me when they did. She has assisted me with my work and she has helped me to get away from it when I needed a break. She has made heavy sacrifices so that I could pursue my career goals and she has never complained. Perhaps most importantly, she has been, and always will be, my best friend.

ABSTRACT

The use of students as behavioral research subjects has been widely criticized, however, empirical investigation of the issue has been sparse. Those studies which have been conducted are inconclusive as to whether students are appropriate research subjects. The differences between students and "real people" continue to cause concern over the generalizability of student-based research. Similarly, laboratory research tasks have been described as too unrealistic to produce generalizable results.

Industrial/organizational psychologists are showing increased interest in union-management relations and much research in this field is being conducted in the laboratory using students as subjects. Hence, it is important to determine whether students can serve as surrogates for union and management negotiators and whether varying levels of simulation complexity can affect the outcomes of bargaining studies.

The first study reported here compared the processes and results of simulated union-management negotiations using undergraduates, graduate students, and union members in a simple bargaining simulation. Results indicated that graduate students and union members demonstrated more self-interest, greater task involvement, longer bargaining times, and a greater propensity to strike than undergraduates. Furthermore, union members saw the task as more realistic and skill-determined than undergraduates. Finally, settlement levels on

the various items showed differences which were explainable in terms of demographics.

The second study compared three levels of simulation complexity using undergraduates as subjects. The low complexity condition used ad hoc groups. In the moderate complexity condition subjects participated in a management simulation and negotiated in groups established for that purpose. Real world constraints were imposed. The high complexity condition was identical to the moderate condition except that negotiated wage rates were subsequently fed into the business simulation. Results showed similar wage/benefit packages among the three complexity levels, however, settlements for individual contract items differed across levels. Significant differences were also found with regard to bargaining times and bargaining seriousness.

Results of the comparison of students and "real people" raise serious doubts about the viability of students as subjects in bargaining research. The study of simulation complexity indicates a need for researchers to build perceptions of realism into laboratory research tasks.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Overview.....	1
Viability of Laboratory Research.....	4
A Review of Laboratory Research in Union-Management Relations.....	26
Rationale.....	37
II. METHODOLOGY.....	41
Experimental Design.....	41
Subjects.....	42
Procedure.....	48
Measures.....	54
III. RESULTS.....	58
Manipulation Checks.....	58
Experimental Results.....	62
IV. SUMMARY AND CONCLUSIONS.....	88
Students versus "Real people" as Research Subjects.....	88
Simple versus Complex Bargaining Simulations as Research Tools.....	92
Recommendations.....	96
Implications for Future Research on Union-Management Relations.....	100
LIST OF REFERENCES.....	103
APPENDIXES.....	113
Appendix A. Tables.....	114
Appendix B. Figures.....	162
Appendix C. Measures.....	165
VITA	180

LIST OF TABLES

Table
Page

1. Comparisons of Students and "Real People" as Experimental Subjects.....	115
2. Criteria for Literature Review.....	118
3. Characteristics of Psychological Studies Dealing with Union-Management Relations.....	119
4. Summary of the Characteristics of Psychological Literature Dealing with Union-Management Relations (by Number of Studies).....	123
5. Mean "Realism Score" by Complexity Condition.....	124
6. "Division of Labor": Frequency by Complexity Condition.....	125
7. Demographic Data by Complexity Condition.....	126
8. Demographic Data by Subject Type.....	131
9. Sex by Subject Type.....	136
10. Sex Composition of Bargaining Groups by Subject Type.....	137
11. Marital Status by Subject Type.....	138
12. Source of Support by Subject Type.....	139
13. Employment Status by Subject Type.....	140
14. Sex by Complexity Level.....	141
15. Sex Composition of Bargaining Groups by Complexity Level.....	142
16. Marital Status by Complexity Level.....	143
17. Source of Support by Complexity Level.....	144
18. Employment Status by Complexity Level.....	145
19. Mean Settlement Levels by Subject Type.....	146
20. Discriminant Analysis of Settlement Levels Across Subject Types.....	147

21.	Percentage of "Union" Groups Selecting each Strategy Item (By Subject Type).....	148
22.	Percentage of "Management" Groups Selecting each Strategy Item (By Subject Type).....	150
23.	Mean "Union" Target and Resistance Points by Subject Type (In Dollars-per-Hour Equivalents).....	152
24.	Mean "Management" Target and Resistance Points by Subject Type (In Dollars-per-Hour Equivalents).....	153
25.	Mean Settlement Levels by Complexity Condition.....	154
26.	Discriminant Analysis of Settlement Levels Across Complexity Levels.....	155
27.	Percentage of "Union" Groups Selecting each Strategy Item (By Complexity Level).....	156
28.	Percentage of "Management" Groups Selecting each Strategy Item (By Complexity Level).....	158
29.	Mean "Union" Target and Resistance Points by Complexity Level (In Dollars-per-Hour Equivalents).....	160
30.	Mean "Management" Target and Resistance Points by Complexity Level (In Dollar-per-Hour Equivalents).....	161

CHAPTER I

INTRODUCTION

I. OVERVIEW

Periodically, industrial psychologists receive reminders about their neglect of research on unions. Typically, these admonitions regarding the imbalance in research intended to assist management and organized labor are accompanied by empirical evidence of the precious few psychological studies of unions. Shostak (1964), Ash (1970), and Huszycz (1976) have compiled indices which enumerate: (a) the number of articles contained in Annual Review chapters devoted to industrial psychology which deal with union-management affairs and (b) the number of chapters included in introductory industrial psychology texts which discuss unions. To these objective indicators of indifference to the human resources problems confronting organized labor one might add still another, more recent index of the discipline's laxity in pursuing research on unions. The Handbook of Industrial and Organizational Psychology (Dunnette, 1976), a reference text designed to serve as a guide for students and practitioners over the next 20 years, does not contain a chapter or a single indexed reference on unions or organized labor.

In fairness to industrial psychologists, unions have not displayed much enthusiasm for acquiring assistance from behavioral scientists. Whereas they regularly employ economists, accountants, lawyers, physicians, and industrial engineers as professional staff,

seldom have unions sought the expertise of industrial psychologists. This prevailing union attitude toward the discipline, coupled with strong demand from management for the services of behavioral scientists (almost exclusively in areas other than union-management relations), has created a climate of "mutual indifference" (Shostak, 1964) between labor leaders and industrial psychologists.

Actually, industrial psychology has done little within the field of union-management relations to serve practitioners on either side. Management has been eager to apply the talents of industrial psychologists to such important organizational problems as selection and placement, training, performance appraisal, and job design. The area of union-management relations, however, has largely remained the jealously-guarded domain of top management. One major exception, of course, has been the involvement of some psychologists in "union busting" activities.

The "mutual indifference" between industrial psychologists and labor relations practitioners may be coming to an end. After many years of limited activity in the field, industrial psychologists appear to be developing an interest in union-management relations. Since 1977, annual conventions of the American Psychological Association have devoted entire paper sessions to presentations of research on unions. Herman and Goldberg (1977) received the Cattell Award for a research proposal dealing with wildcat strikes in the coal mining industry. Schmitt (1978) published a notice in The Industrial Psychologist requesting information from Division 14 (the Industrial-Organizational Psychology branch of APA) members concerning their

research and consulting activities with unions. The stated purpose of collecting these data was to compile a more accurate and current picture of the relationships between organized labor and industrial psychologists. Schmitt's results have since been published (Schmitt, 1979). Kochan (1980) recently noted that behavioral research on union-management relations has long been neglected, but "there are encouraging signs that the situation is changing" (p. 130). Both Kochan (1980) and Brett (1980) have identified promising areas for psychological investigation. Gordon and Nurick (1981) pointed out that

The assumptions psychologists make with regard to the degree of congruence between the needs of workers and their employers influence the type and amount of research that have been performed on unions and union-management relations (p. 303).

Accordingly, they outline two belief systems which have tended to stifle interest in research on unions (Mayo's "natural community" idea and Munsterberg's "instrumental science" approach) and a third assumption ("inevitability of conflict") which has fostered such investigations. Gordon and Nurick (1981) then describe four broad areas in which psychologists can contribute to the field of union-management relations and suggest topics in each area which require study. In short, it appears that industrial psychology may be gaining a new awareness of a field which has traditionally been ignored.

The disinterest of unions in psychological research may be traced to a number of historical factors (Gordon & Burt, 1980). Probably one of the most important factors, however, is the failure of industrial psychologists to develop dependent variables which reflect

the interests of unions. Preliminary steps toward the solution of this problem have been taken; a questionnaire measure of member commitment to the union has been developed (Gordon et al., 1978). As psychologists begin to study the variables which contribute to member commitment, union interest in psychology can be expected to grow. The lack of management interest in a psychology of union-management relations is probably due, at least in part, to a distrust of the type of research typically conducted in this area. Implicit in management's disinterest in psychological research is a fear that the research results cannot be generalized to the "real world" in which managers must operate. It is important, therefore, to inquire about the type of published material interested industrial-organizational psychologists might find should they scrutinize their professional journals in order to determine the character of work which has been conducted on union-management relations. One of the most prevalent types of research in this area is laboratory research. A look at the merits and limitations of the laboratory is in order.

II. VIABILITY OF LABORATORY RESEARCH

Over the years, numerous articles have appeared that ostensibly examine matters pertinent to the field of union-management relations. For example, studies dealing with conflict resolution, problem solving, boundary roles, and negotiation behavior have been performed in a manner which simulates relations between representatives of unions and companies. Tasks like grievance settlement and collective bargaining have served as the vehicles for investigating the

aforementioned psychological phenomena and processes. With rare exceptions, this research has been carried out in research environments utilizing methodologies such as laboratory experiments, role playing, and simulation. While there are differences among these methodologies, for purposes of discussion they will be treated as a group. These techniques may be lumped together because they are all forms of laboratory research (i.e., research within contrived settings) in contrast to field research (i.e., research conducted within naturally-occurring settings).

Laboratory research has been criticized on a number of grounds, most of which call into question its external validity. For example, several authors have attacked laboratory research claiming that the artificiality of the laboratory setting (i.e., a setting established expressly for the purpose of conducting research) prevents generalization to applied settings (McGuire, 1969; Mosier, 1965; Price, 1968). This criticism has received some support in instances where results of laboratory research have failed to predict the behavior of people in "real-life" situations (Chapanis, 1967; Elliott, 1960; Kibler, 1965; Mackie & Christenson, 1967; Simons, 1964). Consequently, it is important to examine some of the factors which might operate to reduce the external validity of laboratory research.

A. Social Psychological Artifacts

Perhaps the fundamental advantage of laboratory research is the opportunity it affords for experimental control. Indeed, Zelditch and Hopkins (1971) have delineated three positive consequences of

laboratory research, all involving the concept of control. These authors state that

. . . it [laboratory research] facilitates the precise measurement of the results of the experiment, both because of the instrumentation possible and because random error due to the influence of extraneous processes is reduced . . . it facilitates the simplification that is the essence of experimentation . . . the social and physical segregation of the research allows him [the experimenter] to regulate the flow of inputs into the system under study and thus to keep the treatments from being affected by extraneous external factors. Finally, not only external influences, but even extraneous internal influences may be eliminated; thus all contamination of the process which is the immediate concern of the experimenter is reduced as far as possible (p. 40, material in brackets supplied by the author).

As Argyris (1968) points out, however, "Rigorousness is to a researcher what efficiency is to an executive: an ideal state that is always aspired to, never reached, and continually revered" (p. 185). Thus, while it is theoretically possible to control all sources of unwanted variance in the laboratory, in practice this lofty goal is never achieved. Contamination of research, even in the laboratory, is inevitable. "The issue therefore is not contamination versus no contamination. The issue is under what conditions can the researcher have the greatest awareness of, and control over, the degree of contamination" (Argyris, 1968, p. 194). One type of contamination which has often been ignored by experimenters in the process of designing a study might be referred to as social psychological artifacts of research. These artifacts are social psychological variables which operate in the experimental situation to produce spurious relationships among experimental variables, thereby leading to invalid inferences. Social psychological artifacts tend to reduce

the external validity of an experiment directly or, in some cases, to reduce external validity by reducing the internal validity of the study.

According to Kruglanski (1973),

To constitute an artifact, a variable needs to satisfy two conditions: (a) be capable (singularly or in interaction) of influencing the phenomenon under study, and (b) be systematically associated with some of the experimental treatments or with the background conditions of an experiment (p. 348).

It is possible to place social psychological artifacts into two relatively distinct classes. The first class of artifacts consists of those variables which are inherent in experimentally controlled observation in the laboratory, and will be referred to here as "setting effects." The impact of setting effects is to limit the generalizability of experimental results obtained in a contrived setting. That is, setting effects limit the external validity of a study. For example, Chapanis (1967) points out that any given laboratory study is limited to examining only a few of the variables that influence behavior in a practical situation. As a result, interactions among "real-world" variables may be ignored or obscured in the laboratory, thereby limiting the generalizability of the research results. Thus, the very simplification which Zelditch and Hopkins (1971) saluted also has a limiting effect on the utility of the laboratory to the extent that relevant variables must be excluded from a given experiment. Perhaps an even more serious problem lies in the fact that those variables which are brought into the laboratory are evitably changed in the process (Chapanis, 1967). The extent to

which a given variable is changed and the significance of that change can, of course, never be fully known to the experimenter.

A more direct consequence of studying behavior in a laboratory setting is the effect on subject behavior of rigorous experimental controls (Argyris, 1968; Douglas, 1976). Douglas states:

If we do not know what their effects are and thus do not know how to control for the effects of controls themselves, then we run the grave danger that as controls increase they unknowingly become more important in determining what we observe. Controls raise the danger that we are studying research procedures, not the natural social world, the world of everyday life (p. 19).

Another direct consequence of laboratory studies lies in the possible discrepancy between the experimenter's definition of the experimental situation and the subjects' perception of it. Douglas (1976) suggested that laboratory research settings have special significance to research subjects:

When we use experimental methods, we also are using a situation that is unnatural, not like everyday life, and one which may have its own special definitions by the members of society. Indeed, all evidence indicates that those situations defined as scientific research settings do have special meanings for the members of society (p. 19).

Back, Hood, and Brehm (1971) suggested that subjects often define the experimental situation differently than does the experimenter. While the experimenter assumes that subjects will attend only to the experimental variables as introduced by the experimenter, subjects tend to view the experiment in ways which are congruent with their own reasons for participating in the research.

The experimental subjects are humans who assent to devote some time to being studied. To do so they accept some experimental procedures which represent situations of little similarity to any life situation. They do not, however,

give up for the time being all the possibilities for human functioning, which may include other capacities and motives than those measured in the specific experiment (Back, et al., 1971, p. 33).

Hence, while the experimenter assumes that subjects will respond only to those variables which are introduced by the experimenter, it is probable that subjects bring an entirely different set of variables to the laboratory with them. Therefore the task which the subjects perform is not precisely that which the experimenter has defined for them. The experimenter's instructions to the subjects will be only a portion of the information used by subjects in responding to the experimental situation (Masling, 1966). This problem is compounded to the extent that the experimental situation confronting subjects is ambiguous (Orne, 1962; Masling, 1966). "Under conditions of ambiguity, the subject will utilize all available cues and information so that he can supply meaning and make order in his situation" (Masling, 1966, p. 93). Orne (1962) contends that subjects not only try to supply meaning to the experimental situation as described by Masling, but that they also attempt to discern and confirm the experimenter's hypothesis.

If we assume that much of the motivation of the subject to comply with any and all experimental instructions derives from an identification with the goals of science in general and the success of the experiment in particular, it follows that the subject has a stake in the outcome of the study in which he is participating (Orne, 1962, p. 237).

Hence, any cues which communicate the experimenter's hypothesis to the subjects are significant determinants of the subjects' behavior. Orne labels such cues "demand characteristics."

The extent to which the subjects' behavior is related to the demand characteristics, rather than to the experimental variable, will in large measure determine both the extent to which the experiment can be replicated with minor modification (i.e., modified demand characteristics) and the extent to which generalizations can be drawn about the effect of the experimental variables in non-experimental contexts (the problem of ecological validity) (Orne, 1962, p. 238).

In a similar vein, Rosenberg (1972) states that research subjects often attempt to behave in a manner which will gain the experimenter's approval. He defines "evaluation apprehension" as ". . . an active, anxiety-toned concern that he [the subject] win a positive evaluation from the experimenter, or at least that he provide no grounds for a negative one" (Rosenberg, 1972, p. 248, material in brackets supplied by the author). The desire to avoid a negative evaluation may constitute a significant determinant of subjects' behavior in the laboratory and this effect may escape the experimenter's notice. Furthermore, it cannot be assumed that all subjects are equally affected by evaluation apprehension.

The interaction of evaluation apprehension with the independent variable . . . is of particular interest, for it suggests that variables associated with the social psychology of research may be closely interwoven in the theoretical and methodological design of experiments. They are not simply general characteristics with similar effects on all subjects or experimental conditions (Miller, 1972, p. 227).

In summary, the act of studying human behavior in a laboratory setting is likely to change the very behavior that is of interest. Several characteristics of laboratory studies which might contribute to changes in subjects' behavior have been identified. The importance of such changes in subjects' behavior lies in their limiting effect on

external validity. O'Rourke (1963) demonstrated that the same subjects respond to the same decision-making task differently in the laboratory than in their own homes. He concluded that "If one of the objectives of small groups research is to make 'in vitro' studies of groups which will suggest something about their behaviors 'in vivo', then it is clear that researchers must become acutely aware of the differences in behavior which are elicited by the laboratory itself" (p. 435).

A second class of artifacts occurring in behavioral research can be called "experimenter effects." According to Masling (1966), research ". . . has now established beyond question that under certain conditions the psychologist, whether in his role as experimenter or test examiner, can exert an influence on his data" (p. 68). While the possibility of experimenter effects has long been recognized in other fields of science, psychologists have only recently begun to explore this problem.

In astronomy, Bessel and Gauss (Boring, 1929) corrected the notion that highly trained observers were interchangeable . . . Bessel began work on the personal equation in 1819, but it took psychology a few years longer, about 140 years, in fact, before the work of Rosenthal (1964) and Orne (1962) brought this issue forcefully to psychology (Masling, 1966, p. 69).

Rosenthal (1967) showed that unintentional covert communication from experimenters to their subjects is quite common in psychological experiments. The nature of such communication can be affected by such factors as the experimenter's experience in conducting research, the behavior of his/her subjects, the physical setting in which the research is conducted, and the experimenter's perception of and

relationship to the principal investigator (Rosenthal, 1967). A particular danger in psychological research is that experimenters will covertly influence their subjects to respond in such a way as to confirm the experimental hypotheses (Rosenthal, 1967; Orne, 1962).

To the extent that the experimenter communicates unintentionally and differentially with his subjects, he has lost some measure of control over the inputs. Since such control is a major reason for our reliance on the experimental method, there are serious implications (Rosenthal, 1967, p. 356).

Thus, not only is the generalizability of experimental results threatened by the possibility of covert communications from experimenter to subjects, the internal validity of the experiment itself is at stake as well.

Another form of experimenter effect consists of the influence which experimenter characteristics have on the behavior of subjects. Rosenthal (1967) cites research indicating that such experimenter characteristics as sex, need for approval, and anxiety level affect subject behavior (Rosenthal, 1966; Sarason, 1965; Crowne & Marlowe, 1964). "The reason for the importance of experimenter differences is, of course, that the subject notices them and responds to them in ways which the investigator can neither predict nor control unless he has first studied the problem" (Masling, 1966, p. 95).

Finally, a third way in which experimenters can affect the behavior of their subjects is through behavior toward subjects in the experiment. Experimenters have been shown to behave differently toward male and female subjects, for example (Friedman, 1964; Rosenthal, 1966). Furthermore, experimenters have been demonstrated

to be subject to practice effects and fatigue effects (Rosenthal, 1967). Finally, experimenters' behavior toward their subjects may be altered by the responses of the subjects. For example, experimenter behavior may change according to whether subject responses in early sessions confirm or disconfirm the experimenter's hypotheses (Rosenthal, 1966; Rosenthal, Kohn, Greenfield, & Carota, 1965).

While this discussion of artifacts in laboratory research is certainly not complete, it does point out a variety of variables in the social environment of the laboratory that threaten the external validity of research findings. Laboratory research does offer certain advantages in terms of experimental control. However, the degree of control achieved in any given experiment may well be overestimated.

That the artifacts discussed here are subtle effects is well documented. Rosenthal (1967), for example, cites evidence that in a particular study the experimenter covertly communicated the experimental hypotheses to his/her subjects. Repeated analysis of videotapes of the experimental sessions over a five-year period, however, failed to identify the cues used by subjects to discern the experimenter's expectancies. Furthermore, it has been shown that principal investigators are able to affect the behavior of subjects through experimenters who are unaware of the experimental hypotheses (Rosenthal, 1966). Finally, the complexity of these subtle influences on subject behavior is attested to by Rosenthal's (1966) finding that verbal cues and visual cues given by an experimenter sometimes carry conflicting messages. Identification and control of social psychological artifacts, then, would obviously be extremely difficult. It

should be pointed out that advocates of laboratory research argue that the occurrence of such artifacts is relatively rare. Frequency of occurrence should not be confused with importance, however. Even a relatively rare phenomenon may have far-reaching consequences since each study must build on previous research; a single study flawed by social psychological artifacts may inspire a large body of meaningless research.

B. The Use of Students as Subjects

The external validity of laboratory research is frequently challenged on the basis of the heavy reliance upon college students as experimental subjects in the laboratory (Dipboye & Flanagan, 1979).

McNemar (1946) argues that:

The existing science of human behavior is largely the science of the behavior of sophomores. Too much research effort is expended on college students with subsequent waste of journal space devoted to speculation concerning whether the findings hold for mankind in general. There may be research problems . . . which can be profitably attacked on the local campus, but it is the responsibility of the proponent of such research to show how the project can lead to generalizations which are not so restricted as to be meaningless (p. 333).

The basis for concern over the use of college students as experimental subjects lies in the fear that such a select group may not be adequately representative of the total adult population to justify the extrapolation of research results to other groups. Indeed, some authors have indicated that samples of students used as research subjects are not sufficiently representative of college students in general to justify generalizations to even that highly selected population (McNemar, 1946; Rosenthal & Rosnow, 1969). Legend

has it that this state of affairs prompted E. C. Tolman to declare that "students may not be real people."

As Smart (1966) points out, college students have a number of unique characteristics which separate them from the adult population at large. Some of the more important of these characteristics include intelligence, age, and social class (Schultz, 1969). Furthermore, when the correlates of these characteristics are considered, the problem takes on even more ominous proportions. For example, Smart (1966) cites evidence that social behavior and learning ability change substantially with age and that such variables as social skills, dominance, affiliative tendencies, and aggressiveness are related to social class. The effects of studying such a restricted sample of human behavior are not known. However, it seems likely that focusing research attention on college students must bias research results in some manner.

Many of the research findings with college students exclusively are probably special to them and of unknown universality. How do we know that the majority of our research . . . is doing any more than exploring the vicissitudes of the present (male) college population? The answer must be that we do not know at present and that as long as we limit ourselves to [the] college population we never will (Smart, 1966, p. 120, material in brackets supplied by the author).

The extent of this problem in psychological research is evidenced by the work of several authors. Based on the 1961 Canadian census, Smart (1966) stated that about 80 percent of the psychological research appearing in major journals is performed with only that 6.3 percent of the adult population which gets to college. Similarly, using figures from the United States Department of Commerce, Schultz

(1969) states that approximately 80 percent of all psychological research is conducted using the 3 percent of the population currently enrolled in college.

No one would assert that human psychologists are interested primarily in the behavior of the male college student any more than that the comparative psychologists are interested solely in the rat's behavior. However, the male college student has become the white rat of human experimentation, to be studied ad nauseum and shouldering out most other types of subjects. College students are employed so extensively chiefly because of opportunistic reasons. In most university settings they are a captive group of willing subjects anxious to please instructors or to complete course requirements by participating in faculty research. Widespread exploitation of this source of subjects has important drawbacks which should lead psychologists to doubt whether they really know what is going on, psychologically, in the big world beyond the university (Smart, 1966, p. 120-121).

The heavy reliance on students as subjects for research does not seem to have changed in recent years. Dipboye and Flanagan (1979) estimated that over 75 percent of laboratory research articles in industrial/organizational psychology utilize students as subjects.

Obviously, systematic comparisons between students and "real people" under identical experimental conditions are required to assess the external validity of student responses. A search of the literature in industrial-organizational psychology uncovered only 14 articles which appeared in refereed journals and reported empirical findings from such comparisons. These findings are presented in Table 1 (Appendix A).

Prior to attempting to discern whether reliable differences exist between the student and "real people" samples, it should be noted that a number of the studies included in Table 1 (Appendix A) are beset by methodological limitations, especially the factor of

small ($n < 30$) sample size for one or both subject groups (Dipboye et al., 1975; Fleming, 1969; Hakel, Dobmeyer, & Dunnette, 1970; Hakel, Hollman, & Dunnette, 1970; Moskowitz, 1971; and Williams et al., 1975). Consequently, conclusions drawn from any one of these studies about the moderating effect of the type of research participant appears subject to the criticisms of Schmidt and Hunter (1978) about ostensible subgroup differences revealed by experiments with low power. Nonetheless, as a group, the studies investigated a wide range of behavior, a condition which contributes to the generalizability of the research taken as a whole (Runkel & McGrath, 1972).

Turning briefly to the results of comparisons between students and other subject types, no firm conclusions may be drawn. Overall, there was some similarity in the results, especially where cultural stereotypes were likely to influence the responses required (e.g., Williams et al., 1975). For example, given the stake of college students in giving good interviews for campus recruiters and, therefore, given that many have prepared themselves for the experience by studying information on the topic provided by campus placement centers or by interviewing for other positions, one should expect commonality in perceptions of the process among recruiters and recruits.¹ However, in ten of 14 articles dealing with a variety of

¹Bernstein, Hakel, and Harlan (1975) reviewed a number of papers that compared the responses of students and "real people" in the selection interview process, three of which appear in Table 1 (these are the articles for which Hakel is the senior author). They concluded that "No important findings that would limit generalizability have been discovered, except that students are lenient relative to interviewers" (p. 267). However, closer examination of the original articles revealed that their authors were

experimental tasks, the authors concluded that the behavior studied differed in important ways in the two groups. Many authors were dubious of the practice of using students as surrogates for "real people" and attributed their doubt to the difference in "experience" with actual work (e.g., Allen & Ruhe, 1976; Miner, 1976).²

C. Comparison of Laboratory and Field Settings

It is important to note that artifacts in behavioral research are not strictly limited to the laboratory (Fromkin & Streufert, 1976). Rosen (1970) found that the behavior of workers whose foremen were interchanged among organizational groups as part of a field experiment on leadership did not begin to confirm research hypotheses until 10 weeks after the manipulation when the workers learned the reason for the experiment. The behavior supporting the experimental hypotheses then persisted for only two weeks. Rosen concluded that the two-week behavior change was attributable to demand characteristics. Similarly, Amir (1969) attributed field research findings on the contact hypothesis of race relations at least partially to experimenter expectancy effects.

somewhat less sanguine about between-group differences than Bernstein, et al. Also, Bernstein, et al. indicated that "strong similarities" (p. 267) were found by Rowe (1967) between students and army recruits when no such statistical comparison was reported in the original paper. Hence, the major conclusion of this widely cited review article may be questioned.

²Behaviorally-oriented researchers in marketing have also studied the validity of using student subjects. A cursory examination of this literature revealed a number of articles which cast doubt on this practice (e.g., Enis & Stafford, 1969; Khera & Benson, 1970; Enis, Cox, and Stafford, 1972; and Shuptrine, 1975).

Respondents in some of the studies have been directly influenced by, and may have tended to comply with the expectations of, research teams or interviewers who generally intended to demonstrate positive attitude change. Similarly, studies in which prestigious persons such as teachers have led subjects through a series of experiences with Negroes suffer from the danger that the research subjects simply cooperated by providing their leader with the changes they knew he was looking for (Amir, 1969, p. 338).

Neither is field research immune to sampling problems. While studies conducted in the field do not rely upon college sophomores as research subjects, the samples used in such research are sometimes no more representative of the target population than are the students often employed in laboratory research. In a recent literature review, Dipboye and Flanagan (1979) found that more than one half of the field studies reviewed employed nonrepresentative samples with respect to the target population. Furthermore, approximately 52 percent of the subjects in the field studies reviewed by Dipboye and Flanagan were associated in some way with the "professional, technical, managerial" category. This finding supports the contention of Fromkin and Streufert (1976) that nonrepresentative sampling problems are not inherent in any particular research technique. The heavy reliance on college student subjects, then, is simply a special case of the general research problem of employing nonrepresentative samples.

Despite the fact that artifacts and nonrepresentative sampling are not restricted to laboratory research, these problems are more likely to plague laboratory studies than field studies. For example, the use of unobtrusive measures helps to eliminate the effects of evaluation apprehension. This technique is generally more feasible in

the field than in the laboratory. The subjects' awareness of being observed is a more acute problem in the laboratory than in the field, also. In some cases it may not be necessary for subjects to be aware of the "guinea pig" status in field research (although there are moral and legal issues involved in such covert observation). Even when subjects are aware of being observed in the field, the complexity of the setting and their involvement in their normal daily tasks tend to limit the degree to which subjects attend to the research process in a well-designed and executed field study (Hawthorne effects notwithstanding). Subjects in the typical laboratory study interact for only a short time and have less involvement in the experimental task and situation. As a result, they do not have an opportunity to adjust to the observation process and their behavior is likely to be affected by their awareness of being observed. Field studies, then, while not immune to the effects of social psychological artifacts, are less prone to such effects than are laboratory studies.

Similarly, the problem of nonrepresentative sampling is more acute in laboratory research than in field research. A field setting which affords an opportunity to observe the phenomena of interest is also likely to provide a sample of subjects which, if not perfectly representative of the target population, is at least relevant to the phenomena being studied. For example, a study of turnover conducted in a particular business organization may not yield information directly generalizable to the population of all business organizations, but the results would at least be representative of some business organizations. While this may be of little comfort to

someone wishing to apply the results of that particular study to another organization, it cannot be denied that the study did allow the researcher to learn something about the turnover phenomenon. A number of similar studies conducted in a variety of organizations should yield a body of information which could be generalized to a relatively large population of organizations. Hence, such studies could be expected to contribute to the building of a meaningful science of human behavior. A laboratory study utilizing college students as subjects, however, cannot be depended upon to yield results which are meaningful to even one type of organization. In other words, even an infinite number of such studies using different samples of college students could not be expected to yield meaningful information about turnover in "real" organizations. Thus, college student subjects are not only nonrepresentative of the population of "all members of business organizations", but they also cannot be assumed to be representative of the members of any business organization. The data collected in such studies may not be relevant to any naturally-occurring phenomenon at all.

D. Coping with the Special Problems of the Laboratory

It would be a mistake, of course, to conclude that laboratory research has no place in psychology, or even that field research is "better" than laboratory research. Indeed, all methods of research have their strengths and weaknesses, and these must be weighed against one another in light of the purposes of any particular piece of research (Douglas, 1976). Any field of research stands to gain from a

programmatic approach which utilizes a "methodologically integrated sequence of studies" (Evan, 1971), testing notions derived from applied settings in more closely-controlled, contrived settings and verifying these findings in the field (Douglas, 1976; Evan, 1971; Lachenmeyer, 1970). The issue is not whether researchers should use field methods or laboratory methods, but rather under what conditions each should be used and how the special problems presented by each may be minimized.

There are a number of conditions under which the laboratory (i.e., contrived) setting presents certain advantages over field settings. Perhaps the most obvious of these conditions is the case in which research in field settings is not feasible. For example, rarely occurring natural events can be studied more extensively in the laboratory. Similarly, problems of accessibility sometimes prevent the study of certain phenomena in their natural settings. Moral and legal restrictions may render data inaccessible in the field. Secondly, the relatively high degree of control available in contrived settings facilitates the drawing of causal inferences, thus making the laboratory attractive for testing specific behavioral hypotheses. The ability to strip away irrelevant and distracting variables in the laboratory makes it possible to isolate important behavioral processes for intensive study. It is clear, then, that the laboratory setting has an important place in psychological research, and any criticism of research conducted in contrived settings must focus on the appropriateness of the laboratory for a particular research problem or on the

way in which a particular laboratory study (or group of studies) has been carried out.

As was stated earlier, laboratory studies are prone to certain special problems which, in order to obtain meaningful data, must be minimized. One such problem is that laboratory research on small groups often focuses on ad hoc groups, which may not be "groups" at all.

Our view is similar to Goffman's who suggests that ad hoc groups are not groups but actually 'gatherings'. . . . Thus, beneath all of the arguments about the merits of artificial experiments, there remains the crucial issue as to whether qualitative differences may exist between ad hoc groups or gatherings and 'real' groups (Drabek & Haas, 1967, p. 339-340).

Similarly, Lorge et al. (1958) state that ". . . A common and dangerous practice is to generalize the principles valid for ad hoc groups to traditioned groups" (p. 338). The key difference appears to rest in the fact that laboratory "groups" generally have only a short duration of contact and therefore do not have an opportunity to develop patterns of interaction and shared norms. According to Weick (1965):

Within the organizational literature, there is widespread agreement that the relationships among members of organizations are stable and ongoing, that these relationships are the product of extended interactions, and that they reflect processes of organizational development. Since laboratory groups convene for short periods of time and develop few traditions, they seem ill-suited to replicate extended interaction (p. 214).

Thus, in order to obtain results which are relevant to "real" groups, it is necessary to increase the duration of observation in laboratory studies so that group norms and interaction patterns may stabilize.

In this way, laboratory groups actually become "real" groups and the problems of generalizability are greatly diminished.

Also related to the short duration of observation in laboratory research is the problem of the subjects' awareness of being observed. In studies of relatively long duration, subjects may tend to become less concerned about the process of observation, thereby reducing the risk of certain artifacts such as evaluation apprehension. The relative simplicity of most laboratory tasks is also a contributor to the problem of subjects' awareness of being observed. As the cognitive complexity of the laboratory task increases, subjects could be expected to focus more on the task itself and less on the observation process. That is, greater cognitive complexity should lead to greater subject involvement in the activity at hand and less self-consciousness about being observed and evaluated. Furthermore, a complex laboratory task more closely approximates the complexity of the "real world." For example, Weick (1965) suggests that clear feedback is generally provided in laboratory experiments while feedback in the "real world" is most often ambiguous. A variety of processes may be affected by such differences, the most obvious in this case being the decision-making process. In order to diminish the effects of evaluation apprehension and to increase the relevance of the laboratory task to the "real world", laboratory tasks should be relatively complex in contrast to the simple, game-like tasks often used.

The special meaning which subjects often attribute to laboratories also presents a problem peculiar to contrived settings.

To the extent that the subject's role is ambiguous or devoid of significance (with respect to everyday life), each subject will supply some meaning of his/her own. As was stated earlier, it is likely that subjects will define the experimental situation differently than the experimenter intended. In order to decrease the likelihood and severity of such discrepancies, the subject's role should be clearly defined and the experimental task should have widely recognized social significance; i.e., instead of asking subjects to copy lists of nonsense syllables, an experimenter might have subjects copy what are ostensibly lists of customers' names and provide them with a plausible reason for doing so.

This discussion of the special problems inherent in laboratory research is, of course, incomplete. It does, however, demonstrate that the existence of such problems does not require that laboratory research be abandoned. Generally, when such problems are recognized in advance, their effects may be minimized by carefully designing the experimental procedures. While the generalizability of research findings from a given study in any setting is never guaranteed, a body of carefully designed and executed laboratory studies can provide a wealth of meaningful information. In contrast, carelessly conducted laboratory research will be, at best, meaningless, and at worst, misleading.

III. A REVIEW OF LABORATORY RESEARCH IN UNION-MANAGEMENT RELATIONS

A. Purpose and Scope

The first step in building a psychology of union-management relations is to examine the character of past research in the area and to map out a course for future work to follow. Such an examination is important for two reasons. First, psychology, like all fields of study, relies on the results of past research to serve as a point of departure for future endeavors. Thus, it is essential to develop a feel for the level of confidence which can be placed in the findings of previous studies. Secondly, the identification of weaknesses in the methodology of past research will allow the development of new approaches yielding data worthy of greater confidence in the future.

The purpose of the present review, then, is to present a critique of past research qua its role in the development of a psychology of union-management relations. The scope of the review is limited in several ways. First, only articles presenting the results of empirical research are reviewed. Secondly, only those articles appearing in journals familiar or reasonably accessible to most industrial psychologists are included.³ Third, the review covers only a limited time span (1969-1981) since these relatively recent articles

³The studies reviewed here appeared either in journals traditionally considered relevant to the field of industrial psychology (e.g., Journal of Applied Psychology, Organizational Behavior and Human Performance, Personnel Psychology, Administrative Science Quarterly, etc.) or in journals covered by Psychological Abstracts. The former are considered familiar to industrial psychologists, the latter are likely to be consulted by industrial-organizational psychologists with an interest in the processes examined in these particular articles.

are the most likely to influence contemporary researchers. Finally, since most of the empirical research concerning union-management relations has been conducted in contrived settings, and since the special problems presented by such settings are of primary interest here, the review is limited to research conducted in the laboratory.

B. Criteria Used in Evaluating Research Studies

There has been considerable debate in the literature over the need for experimental realism.

Some experimental situations bear a close resemblance to actual organizations, most do not. This raises the important question, to what degree does a lack of resemblance imply a lack of relevance? (Weick, 1965, p. 199).

Some authors contend that to the extent no critical differences are perceived to exist between a specific research setting and a given organizational setting, a researcher may assume his experimental results are relevant to that particular organizational setting (Fromkin & Streufert, 1976). There is some question as to what constitutes a "critical" difference, however, leading to disagreement as to how realistic an experiment needs to be in order to provide meaningful results.

Clearly, there is little warrant to the assumption that the greater the similarity between the experimental and field situations, the greater the generality of the experimental outcomes. . . . Blanket indictment of experiments because of their artificiality is meaningless and distracting (Weick, 1965, p. 207).

Weick holds that it is not the number of similarities between the experimental setting and the applied setting, but rather the kinds of similarities which are important to generalizability. Fromkin and

Streufert (1976) conclude that:

The argument that realism requires multiple similarities between laboratory and organizational settings seems greatly exaggerated. . . . It is more likely that only a small number of variables are required to depict organizational phenomena in general. . . . In many cases it is unnecessary to require arbitrarily the presence of more than one or two of the attributes simultaneously in any single experiment (p. 441-442).

These few crucial attributes are referred to by Fromkin and Streufert as "boundary variables." Zelditch and Anderson (unpublished manuscript, 1962) point out, however, that the problem in taking such an approach lies in identifying the one or two attributes of greatest importance prior to extensive experimentation.

Many of the properties of the heuristic analogue [an experimental situation having numerous realistic attributes] are not at all necessary to the phenomenon simulated. This cannot be known before simulation, but as an investigation progresses more and more irrelevant properties are removed. In the end the simulation may look very little like the real organization . . . The optimum strategy in constructing experimental settings, therefore, is to gradually strip the analogue of superficially realistic properties until it is possible to rigorously formulate and precisely control the simplest meaningful situations (p. 14, material in brackets supplied by the author).

Since little has been done to identify the "boundary variables" in most psychological processes, it is reasonable to conclude that Fromkin and Streufert (1976) are probably premature in their approach. Weick (1965) states that:

Experiments with organizations are likely to be 'property-rich' and complex for some time, because there has been little clear specification of critical organizational variables. Investigators make the laboratory as lifelike as possible to avoid crucial omissions (p. 204).

Thus, in the absence of a systematic research program or a well-developed theory, laboratory research should incorporate a high degree

of experimental realism, i.e., the research setting should closely resemble the "real world" setting of interest.

Given this conclusion, one major criterion for evaluating any laboratory study on union-management relations must be the degree of correspondence between the research setting and the "real world." This correspondence cannot be assessed objectively, of course, since the so-called "real world" is not a single, well-defined setting, but rather consists of a wide array of situations existing in the natural social world. There can, therefore, be no clear specification of all of the characteristics of the "real world" around which an experimental setting should be designed. The best that could be hoped for is the identification of a number of characteristics and principles which are common to most natural settings and which appear to be important for designing contrived settings. A few authors have taken on the task of identifying such characteristics and principles (Drabek & Haas, 1967; Rapoport, 1959; Weick, 1965). Each has defined "realism" in terms of a few crucial characteristics of organizations or groups and each has pointed out some common weaknesses in laboratory research as it is typically conducted. The criteria used in the present review incorporate many of the factors identified by these authors and add a few characteristics which may be important to much of the research within the field of union-management relations. These criteria may be divided into two major categories: (1) those dealing with subject issues and (2) those concerned with task issues. Table 2 (Appendix A) lists the criteria in each category.

1. Subject Issues

The criteria dealing with subject issues involve the type of subjects used and the type of groups employed (when the focus of the study is group behavior). If one is interested in generalizing research results to an applied situation, the most desirable type of subject is an individual drawn from a relevant "real world" setting. For example, studies of unions should use samples of union members, studies of management should use samples of managers, and so on. Subjects drawn from segments of society having no knowledge of or experience in union-management relations, even if randomly sampled from the general population, are less desirable for use in studying union-management relations. Particularly undesirable are subjects drawn from highly selected segments of society which are irrelevant to the subject of interest. College students constitute such a group (unless the study focuses on the behavior of college students).

Groups employed in research may also be categorized into three distinct classes. The only unacceptable type of group is the ad hoc group which was previously described as a "gathering" (Drabek & Haas, 1967). Such groups are created for research purposes, exist only for a very short time, and do not develop differentiated roles or group norms of their own. A second category of groups consists of those groups which are formed for research purposes but are allowed to function over an extended period of time and develop their own purpose, norms, and differentiated role structure. Finally, the third type of group is the existing group, i.e., a group which exists independently of the research project and has already developed

patterns of interaction on its own. Either of the latter two types of groups is considered acceptable (Drabek & Haas, 1967), though the existing group, due to its relatively long history and independent purpose, probably is the more desirable.

2. Task Issues

Task-related issues concern the degree to which subjects in laboratory research are assigned activities which approximate "real world" tasks in terms of cognitive complexity, clarity of information or feedback, and the requirement of accepting the consequences of one's own behavior. Table 2 (Appendix A) lists issues related to organizational tasks in general and a few issues which are of special importance to some aspects of union-management relations.

The first issue to be considered is that of task interdependence. A number of authors (Drabek & Haas, 1967; Rapoport, 1959; Weick, 1965) have noted that in natural settings the task performance of one individual or team is generally related to the performance of some other individual(s) or group(s). Drabek and Haas (1967) state that:

. . . social systems exist in, and interact with an environment. Whether the focus of study is a small work group, or an entire organization, relationships with other units nearly always exist. Such activity is often crucial to group functioning. Interunit interaction, be it basic 'input' information, 'feedback' data, etc., must be socially meaningful to experimental subjects (p. 344).

Thus, a desirable laboratory task must allow for interdependence among individuals or groups. That is, the experimental task should embed

the subject in a social network with other participants rather than allowing each individual to operate independently.

Weick (1965) has noted that in real organizations:

There are often long delays between action and outcomes. Numerous events intervene. When the outcome finally becomes known, it is difficult to determine which of the intervening events is responsible. . . . Feedback is also ambiguous, because persons seldom know if alternative actions would have worked better, they are unwilling to admit failures, and they change criteria of performance when performance falters. All of these factors suggest that organizational members may be uncertain how well they are doing and what corrective actions they should take (p. 220).

One major consequence of such ambiguity is that it becomes virtually impossible to make strictly rational decisions due to a lack of adequate information or, perhaps in some cases, due to an information overload (resulting in similar ambiguity of feedback). A well-designed laboratory study, then, should provide information to participants which is either unclear or inadequate or which cannot be entirely processed due to its sheer volume. For the purposes of this review, studies which present clear, concise feedback to subjects were judged to be nonrepresentative of "real-world" situations.

Rapoport (1959) states that laboratory tasks should have more than one criterion of evaluation. There are at least two arguments in favor of employing multiple criteria. First, most activities carried out in natural social settings have more than one indicator of success or failure. Thus, incorporation of multiple criteria into laboratory tasks provides a closer match in terms of complexity between the experimental task and non-experimental tasks. Secondly, the existence of multiple criteria in "real-world" tasks often leads to conflicts

among criteria (Weick, 1965; Rapoport, 1959). That is, attempts to optimize performance with respect to one criterion may interfere with efforts aimed at optimization of performance with respect to other criteria. For these reasons, any laboratory task which employs only a single performance measure is probably too simplistic to provide meaningful data.

Another characteristic of most tasks performed in natural social settings is the existence of a division of labor (Weick, 1965; Rapoport, 1959). Since division of labor often results in greater social complexity, it may be important that laboratory tasks incorporate this factor. It should be noted that division of labor is closely related to task interdependence. Furthermore, the very definition of a group requires a differentiation of member roles. Within the context of the present review, a task which incorporates such role differentiation was judged superior to an experimental task which fails to do so.

Some important task-related issues are specific to the field of union-management relations. This review deals with a few such issues. However, future analyses should attempt to identify a broader array of such issues. The first issue considered in this review is the degree to which participants perceive their future outcomes to be related to their present performance on the experimental task. One factor which clearly tempers the behavior of representatives of both union and management is the knowledge that the relationship between the parties must continue long after any particular round of negotiations ends, after any grievance is settled, after any given

production standard is set, and so on. A well-designed laboratory study should, therefore, make provisions for this factor, whether by actually incorporating extended interaction into the study or by simply incorporating the expectation of extended interaction.

Another issue important in the field of union-management relations is the requirement of conformity to a set of "real-world" constraints. Since management and unions must operate within the bounds of such constraints as labor law, NLRB regulations, and economic realities, similar constraints should be imposed on laboratory groups if research findings are to be generalizable beyond the laboratory. This criterion is applied to studies covered in the present review. It should be noted that studies examining processes which are not normally subject to any such constraints may not need to incorporate these restraints into the experimental task.

Finally, a third characteristic of union and management representatives which should be preserved in the laboratory is their accountability to their respective groups. Therefore, this review considers the use of representation without accountability to constitute a flaw in the design of the experimental task.

3. Conclusions

While adherence to the principles inherent in the subject-related and task-related issues outlined above cannot guarantee the generalizability of a laboratory study, it at least ensures some minimal comparability between the laboratory and the "real world." Similarly, failure to adhere to these principles does not condemn a

study to the discovery of meaningless facts. However, it does prevent the researcher from knowing whether or not his/her findings have any meaning outside the laboratory. With these points in mind, an examination of current laboratory research on union-management relations follows.

C. Evaluation of the Current Literature

A total of twenty-five studies concerning union-management relations were found in the literature. Table 3 (Appendix A) lists these studies and evaluates each study against the criteria discussed above. A summary of the findings, giving the number of studies meeting each of the criteria, is found in Table 4 (Appendix A). Note that all but one of the studies reviewed (Maier & Sashkin, 1971) are bargaining studies. Also, two of the studies (Druckman, 1967; Druckman, 1968) do not fall within the time span of the review designated earlier. These two studies were included because they were cited as direct antecedents of the Klimoski and Ash (1974) article.

Several weaknesses of the literature are apparent from perusing Tables 3 and 4 (Appendix A). Twenty-two of the 25 studies relied on either undergraduate or graduate students as experimental subjects. One of these 22 studies (DeNisi & Dworkin, 1981), however, focused on the impact of using naive negotiators. In one case (Morley & Stephenson, 1969), the type of subjects is not reported. One study (Shapira & Bass, 1975) employed managers (but no union members) as subjects. Balke, Hammond, and Meyer (1973) were the only authors to use both managers and union members in their research.

Eighteen studies employed ad hoc groups. In twelve studies subjects bargained in dyads, thereby removing bargaining from its normal social context. Programmed offers were substituted for the bargaining opponent in four studies. In only two studies were real groups used (Balke, Hammond, & Meyer, 1973; Stern, Sternthal, & Craig, 1975).

Other criteria were also met only infrequently. Eight studies developed a division of labor among subjects. Expectations of future interaction were created in only two studies (Balke et al., 1973 and Wall, 1981, Study #2). Real world constraints were employed in nine studies. However, in most cases such constraints consisted of very small fines for negotiators unable to reach agreement. Slightly less than half of the studies made subjects accountable to their group for their task performance.

On the positive side, all but four studies employed multiple performance measures. Furthermore, while the studies taken as a group fared rather poorly against the criteria considered here, two of the studies (Balke et al., 1973; Stern et al., 1975) stand out as good examples of well-designed laboratory research. Both of these studies meet nearly all of the criteria considered in this review.

It should be pointed out that these studies have been reviewed against a limited set of criteria. Such important issues as sample size, experimental design and control, and adequacy of statistical analyses have not been considered. While an evaluation of the literature should deal with these issues, the scope of this review is intended to be more narrow and therefore, it should not be considered

a comprehensive view of the psychological literature dealing with union-management relations.

IV. RATIONALE

While the use of college students as research subjects has been widely criticized, empirical investigation of the issue has been sparse. As indicated earlier, those few investigations which have been carried out are inconclusive with respect to the question of whether or, perhaps more importantly, when students may be appropriate subjects for psychological research. Rather than seeking a general solution to this problem, it is suggested that investigators should determine the appropriateness of using students as subjects within any given area of research before proceeding to build a student-based science within that particular field. Therefore, one purpose of the present study was to investigate the practice of employing students as subjects in bargaining research. The importance of such an investigation is clearly stated by Rubin and Brown (1975):

With respect to the issue of subject selection, we desperately need to conduct more research in which subjects are drawn from something other than a college-age, middle-class, student population. Bargaining research can and should be geared to something more profound than the 'social psychology of the college sophomore' (p. 297).

The primary source of concern over the the use of students as subjects centers around the difference in knowledge and experience which separates students from so-called "real people." Students are a diverse group, however, and similar differences in knowledge and experience may exist among various groups of students. DeNisi and Dworkin (1981) demonstrated that naive bargainers responded less

favorably to final offer arbitration than did bargainers who viewed videotaped negotiations in which the final offer approach was used. Both groups of subjects were undergraduate students, with the principal difference between groups being exposure to and understanding of final offer arbitration. It is reasonable to speculate, therefore, that advanced students (e.g., graduate students) in business-related fields may behave differently in a bargaining simulation than undergraduates. Graduate students have a greater amount of formal training and may be more likely than undergraduates to have held (or to hold) a position in the "real world." Therefore, graduate students might be more likely to have had the opportunity to accumulate relevant experience.

The first issue explored in this study, then, concerned possible differences among three types of subjects. Specifically, it was expected that behavior in a simulated union-management bargaining situation would differ significantly on the basis of subject-type. Differences in behavior were expected to be reflected in the actual bargaining process as well as in bargaining outcomes. While there was no firm basis for predicting the precise nature of the intergroup differences, it was believed that certain process variables would vary directly with the subjects' experience with and understanding of the field of union-management relations. For example, complexity of bargaining strategies, bargaining seriousness, bargaining time, and bargaining effort were expected to be highest among union members, lowest among undergraduates, and intermediate among graduate students. Bargaining outcomes were also expected to be distinctly

different for the three subject types. However, no specific predictions could be made.

Another issue important to laboratory research in the field of union-management relations is experimental realism or complexity. A review of the current literature indicated that most bargaining research has been conducted in fairly simple simulations. While some authors contend that attention to one or two "boundary variables" is adequate to ensure the external validity of laboratory research (Fromkin & Streufert, 1976), others argue convincingly in favor of more complex simulations.

Social psychologists interested in the study of bargaining need to find a way of developing richer and more interesting laboratory paradigms than are presently available. As we have labored to indicate . . . the PD [Prisoners' Dilemma] game has given rise to hundreds of experimental studies, despite its obvious simplicity and many limitations. Similarly, other paradigms . . . have been latched onto with considerable, if lesser, zeal even though they represent only partial and largely incomplete abstractions of the bargaining process. If researchers are to understand the complex dynamics of bargaining, we believe it essential that they (we) create paradigms that incorporate this complexity, thereby permitting the examination of a spate of important and as yet largely unstudied issues. Indeed several such complex paradigms already exist . . . although researchers have not yet found them fashionable or intriguing enough to warrant serious attention (Rubin & Brown, 1975, p. 296-297, material in brackets supplied by the author).

Though the controversial issue of experimental realism or complexity has been debated in the literature for quite some time, relevant empirical evidence is sadly lacking. One study, dealing with international negotiations, tangentially addressed the issue. Bonham (1971), using a bargaining simulation which incorporated a number of realistic conditions, found that many procedural and substantive

aspects of actual disarmament negotiations could be replicated in the laboratory. Bonham also found that laboratory negotiations did not parallel international talks when differences in issue emphasis among the real negotiating teams were ignored in the laboratory. Whether or not a simple simulation incorporating differences in issue emphasis could produce realistic results is not known. Bonham, however, concluded that:

The significance of these results for international relations . . . depends largely on the degree to which the negotiation simulation resembles crucial features of postwar disarmament negotiations. The greater the similarity, the more confidently the experimental results can be generalized to the historical negotiations (Bonham, 1971, p. 307).

In any case, the relevance of Bonham's findings to union-management negotiations is uncertain.

Therefore, in response to a gap in the empirical literature, an exploratory study of the effects of simulation complexity on bargaining behavior and outcomes was carried out. Again, there was no precedent upon which to base specific predictions, however greater complexity was expected to lead to higher levels of bargaining strategy complexity, bargaining seriousness, bargaining time, and bargaining effort. No specific predictions could be made with respect to bargaining outcomes. Nonetheless, differences in the bargaining process across complexity levels were expected to lead to differences in bargaining outcomes.

CHAPTER II

METHODOLOGY

I. EXPERIMENTAL DESIGN

In order to explore the issues outlined above, two studies were designed and carried out. The first study required comparisons of bargaining behavior and outcomes among undergraduates, graduate students, and union members. A low complexity simulation (to be described below) was used for these comparisons. The experimental design employed in this study appears in Figure 1 (Appendix B).

The second study called for comparisons of bargaining processes and outcomes across three levels of simulation complexity. These comparisons were carried out according to the experimental design shown in Figure 2 (Appendix B). The first (lowest) level of task complexity consisted of a bargaining simulation in which subjects had no prior involvement in the experiment and bargaining results had no anticipated impact on future activities. The second (moderate) level of complexity used the same bargaining simulation. However, subjects were participants in a complex business simulation and, therefore, had an opportunity to develop stable relationships, group norms, and a rationale for participation in bargaining other than that of serving as a "guinea pig."

One major difference between the typical bargaining experiment and real bargaining situations is that bargaining experiments seldom require subjects to live with their bargain. That is, unlike the real

bargaining situation, experimental bargaining paradigms generally make subjects aware that there will be no long-lasting consequences of the bargain they make (or fail to make). In a real union-management bargaining situation, both parties know that their future welfare depends to a certain degree on their ability to obtain a favorable agreement. At the same time, both sides may be somewhat reluctant to press an advantage to the limit, knowing that their counterpart may seek revenge either in future bargaining sessions or in daily activities (e.g., job assignments, filing and handling of grievances, etc.). It appears likely that this difference may constitute a "boundary variable" (Fromkin & Streufert, 1976) for the study of union-management bargaining in the laboratory. Hence, under the third, or high, complexity condition, subjects were directly affected by the outcome of their bargaining. That is, the third level of the complexity factor consisted of a condition identical to the moderate complexity condition with the added stipulation that future wage and benefit costs for purposes of the business simulation were determined through the bargaining exercise.

II. SUBJECTS

Subjects for the two experiments were recruited from three different populations. One group of subjects consisted of undergraduate students enrolled in introductory management courses at a large, southeastern state university. A total of 252 undergraduate students participated.

A second group of subjects was recruited from among graduate students seeking the Master of Business Administration (MBA) or Doctor of Business Administration (DBA) degree at the same university. Of the 84 graduate students participating, 62 percent were enrolled as full-time graduate students.

The final group of subjects were rank-and-file as well as officials of southeastern locals of an international union. The members were participating in a week-long training program conducted on the campus of a southeastern university. Seventy-two union members were recruited.

Subjects employed in the comparison of students and "real people" were drawn from diverse populations and were found to differ along a number of dimensions. Tables 7 and 8 (Appendix A) contain demographic data as reported by the subjects. As might be expected, subject groups differed with respect to age. Union members were found to be the oldest group ($\bar{x}=41.64$ years) and undergraduates were the youngest ($\bar{x}=21.33$ years) with graduate students intermediate in age ($\bar{x}=29.63$ years).

Of the 234 subjects reporting their sex, 155 were male and 79 were female. The distribution of males and females across the three subject groups differed with males being more heavily represented among union members than among either of the student groups (see Table 9, Appendix A). The distribution of males and females across the undergraduate and graduate student groups differed only slightly, however. The sex composition of individual bargaining groups within each subject-type is shown in Table 10 (Appendix A).

As might be expected, union members were more likely to be married than either graduate students or undergraduate students. Undergraduate students were less likely to be married than were the graduate students. Table 11 (Appendix A) shows the distribution of subjects by marital status.

Approximately 55 percent of the subjects indicated that they were self-supporting. Among undergraduates only 17.86 percent considered themselves self-supported, while 95.83 percent of the union members said they paid their own way. Approximately 57 percent of the graduate students reported that they were financially independent of their families. Table 12 (Appendix A) shows the distribution of subjects in each category with regard to source of support.

Differences were also found in employment status when subjects were classified into one of three categories ("employed full-time", "employed part-time", or "not currently employed"). All of the union members were employed full-time, while 37.80 percent of the graduate students held full-time jobs. Only 3.57 percent of the undergraduates (three students) had full-time jobs at the time of the study. Of the latter group, 57.14 percent were not employed, while 28.05 percent of the graduate students were not employed in any capacity. The distribution of subjects with respect to employment status is shown in Table 13 (Appendix A).

While both student groups were homogeneous with respect to education level, the union members had varied educational backgrounds. Approximately one third of the union members (33.82 percent) had not completed high school. Nearly 27 percent had some

education beyond the high school diploma, either in college or in business or technical school. Included in the latter group were two individuals who had earned college degrees. The remainder (approximately 40 percent) had ended their formal schooling after graduating from high school. Only one union member reported being currently enrolled as a student (part-time undergraduate). Approximately 38 percent of the graduate students were attending school on a part-time basis, while all but two of the undergraduates were full-time students.

Finally, subject groups differed in terms of their attitudes toward labor unions. While undergraduates ($\bar{x}=52.95$) held attitudes similar to those of graduate students ($\bar{x}=52.136$), both student groups differed sharply from the union members, the latter group holding considerably more favorable attitudes toward unions ($\bar{x}=85.828$). The overall difference between union member attitude scores and graduate student scores (the extreme groups) amounts to an average per-item difference of 1.685 scale points on a five-point scale.

In summary, a number of demographic differences were found among the three subject samples. Undergraduates tended to be relatively young, unmarried, and dependent upon their families for financial support. Very few were employed in more than a part-time capacity, and over 80 percent said that they had never held a full-time job of any kind. Graduate students were generally of intermediate age, approximately equally likely to be married or single, and usually financially independent of their families. All but about 15 percent had at one time held a full-time job, and over 35

percent were employed full-time at the time of the study. Union members were, as a group, older, less educated, and more likely to be married than either of the student groups. All of the union members held full-time jobs at the time of the study. Both undergraduate and graduate students held slightly negative attitudes toward unions, while union members held relatively favorable attitudes towards unions.

Subjects participating in the three levels of simulation complexity were all undergraduate students enrolled in a Junior-level introductory management course at a large state-supported university. Subjects averaged 21.00 years of age ($N=244$) and no large differences in age were found among the three complexity levels. A total of 155 males and 93 females participated and the distribution of males and females differed only slightly across complexity levels (see Table 14, Appendix A). The composition of individual bargaining groups with respect to sex across complexity levels is shown in Table 15 (Appendix A).

Of the 246 undergraduates reporting marital status, 219 (89.02 percent) were single, while 25 (10.16 percent) were married. Only two of the respondents were divorced. The distribution of subjects by marital status is shown in Table 16 (Appendix A).

Approximately 79 percent of the participants reported that their primary financial support came from their parents or a working spouse. The remaining 21 percent supported themselves through full- or part-time jobs (see Table 17, Appendix A).

While relatively few of the subjects were self-supporting, nearly half (114 of 244 or 46.72 percent) indicated that they were currently employed in some capacity. Most of the employed students worked part-time while only 11 held full-time jobs. One hundred thirty (53.28 percent) were not employed at the time of the study. Due to the small numbers of students reporting full-time employment in all three complexity conditions, the data were collapsed into two categories ("currently employed" and "not currently employed"). Table 18 (Appendix A) shows the number of subjects in each category.

Finally, only slight differences in attitudes toward unions were found among subjects in the three complexity levels. High complexity subjects held the most favorable attitudes ($\bar{x}=56.08$), low complexity subjects had the least favorable attitudes ($\bar{x}=52.95$), and moderate complexity subjects were intermediate in their attitudes toward unions ($\bar{x}=54.60$). Similar results were found when attitude scores were averaged across bargaining group members to yield a group-level measure. The practical significance of these attitude differences, however, seems questionable. Attitudes were measured by twenty items using a five-point response scale for each item, resulting in a possible range of scores from 20 to 100. The average scores for the high and low complexity groups differed by only 3.13 points, or less than 0.16 scale points per item on the average.

III. PROCEDURE

A. Bargaining Exercise

All subjects took part in simulated contract negotiations entitled "Exercise Labor Negotiations", a multi-issue bargaining paradigm (Slusher, Sims, & Thiel, 1978). The exercise provides participants with background information including current contract provisions, general business conditions within the simulated industry, historical bargaining patterns within the industry, a basis for estimating costs to management for possible settlements, final union and management offers from a hypothetical previous bargaining session, and other similar information.

Bargaining could proceed for up to six 20-minute sessions. If no agreement had been reached by the end of the fourth session, a strike began. For those teams participating in the business simulation, the onset of a strike would trigger strike penalties to be assessed against both the union and the management team involved in the strike. Failure to reach agreement during the first post-strike bargaining session would result in further strike penalties for both teams. For all teams participating in the business simulation, mediation services were available on a strictly voluntary basis. Participants were told that at the end of the final bargaining session, teams failing to reach agreement would have unresolved issues settled through compulsory arbitration. Actual arbitration was to take place only for those groups involved in the business simulation. For all

other groups, the bargaining exercise ended at the close of the final bargaining session.

Four-person groups were used for purposes of the business simulation. Each group had responsibility for managing a simulated "company." For the purpose of bargaining, each group was randomly divided into a two-person "management team" and a two-person "union team." The "management team" from each group bargained with the "union team" from a different group. Subjects not participating in the business simulation were randomly assigned to either a two-person "management team" or a two-person "union team." For all teams participating in the business simulation, one member was designated chief negotiator while the other member was to act as an advisor and analyst. Thus, the requirement of role differentiation as described in Section III.B of CHAPTER I was provided for these groups, thereby contributing to the realism of the bargaining simulation. No such distinction was established by the experimenter for bargaining teams not involved in the business simulation.

Other task-related criteria (see Table 2, Appendix A) were also met within the context of the bargaining exercise. Group performance for all groups was assessed by a number of performance measures to be described later. For the moderate and high complexity conditions, a degree of task interdependence was incorporated into the exercise by basing overall team performance on relative standing (rank) at the end of the exercise. For example, the performance of a particular union negotiating team was a function of that team's bargaining skill, the bargaining skill of the opposing management team, and the bargaining

performance of all other union negotiating teams. Negotiators had only a vague notion of their own performance level since participants were not given information about rival teams' performance until after all teams had completed their bargaining. Performance feedback was therefore incomplete and ambiguous. Most of the general organizational issues (see Table 2, Appendix A) relevant to the design of the experimental task could be manipulated within the context of the bargaining exercise itself. Those criteria listed as issues specific to union-management relations (see Table 2, Appendix A), however, were not dealt with in the bargaining exercise. These issues (expectation of future interaction, incorporation of "real world" constraints, and representation with accountability) were manipulated in the context of the business simulation as described below.

B. Business Simulation

The business simulation used in this research is entitled QUANTSIM (Slusher, Sims, & Thiel, 1978) or the Profit Center Simulation (Hand & Sims, 1976). Since a full description of the simulation is provided by the aforementioned authors, only a brief overview will be given here.

The simulation involved "... competitive interaction between different management teams representing simulated business companies" (Slusher et al., 1978). Participants were required to make forty production, forecasting, pricing, and advertising decisions for three different products each simulated business quarter. One week was allowed for making quarterly decisions. The simulation allowed

various market characteristics to be preset, including each product's responsiveness to price, quantity, and advertising.

Quantitative analysis combined with effective group decision processes [enable] firms to exploit market opportunities. No strictly defined optimal strategy [exists], since outcomes [depend] on the interaction of all firms in the simulated market. These interactive effects are determined by overall industry behavior and [are] unaffected by the total number of firms (Slusher et al., 1978, material in brackets supplied by the author).

Batch computer runs were made for each simulated business quarter, and each team received a detailed performance report to be used in making decisions for the following quarter. Nineteen performance measures were provided, reflecting team success in financial management, marketing, forecasting, inventory control, maintenance planning, and goal achievement.

Within the context of QUANTSIM, a number of steps were taken to increase the complexity or realism of the bargaining exercise. As was stated earlier, role differentiation was formalized for negotiating teams participating in QUANTSIM by designating a chief negotiator and an analyst for those teams. Some expectation of future interaction was provided since competition in the business simulation was to continue after contract negotiations were completed.

In addition, realistic variables were incorporated into the bargaining exercise for QUANTSIM participants in three other ways. First, as was stated earlier, unresolved issues were to be settled through compulsory arbitration for those teams participating in the business simulation. While compulsory arbitration is relatively rare in private sector bargaining, it is common in the public sector.

Furthermore, this approach would provide a reasonable means for determining personnel costs for those teams whose future QUANTSIM performance depended upon their bargaining outcomes. All issues had to be resolved for these teams and compulsory arbitration would provide a more meaningful method of resolving differences between negotiating opponents than the use of some arbitrary decision role.

Second, to further promote realism, voluntary mediation service was made available to QUANTSIM negotiators. Mediation service could be requested by negotiators at any time, with the single requirement that negotiating opponents be in agreement on the need for mediation. That is, all requests for mediation had to be made bilaterally.

Third, while all negotiators were expected to engage in active and meaningful bargaining, only QUANTSIM participants were bound by realistic constraints. Good faith bargaining and unfair labor practices as defined by the National Labor Relations Board (NLRB) were briefly explained to QUANTSIM bargainers. These participants were required to observe the "real world" rules of labor negotiations. To ensure adherence to these rules, teams were allowed to bring unfair labor practice charges to a simulated labor relations board (consisting of a single member) in order to seek redress of alleged rule violations.

Finally, the QUANTSIM setting provided accountability and representation since each company was represented by two negotiating teams, each of which was required to report its performance to the company as a whole. This accountability was particularly salient for

those teams whose performance in the business simulation was partially determined by the bargaining performance of both negotiating teams. Note that this situation stood in stark contrast with that of subjects not involved in the business simulation since the latter did not represent any real group and had no teammates to whom to report their bargaining results.

In addition to the specific variables described above, QUANTSIM provided advantages in at least three other ways. First, QUANTSIM participants gained experience in dealing with business-related issues which may contribute to their understanding of the issues at stake in labor negotiations. Any differences found between QUANTSIM participants and non-participants may be due in part to this experience factor. Secondly, participation in an on-going simulation should serve to increase subject involvement in the bargaining exercise, particularly when bargaining results are fed into the business simulation as a determinant of future performance. Such involvement could be expected to increase subjects' task motivation and to decrease their concern about being observed. Third, participation in QUANTSIM provided a vehicle for the development of real groups with shared norms and established interaction patterns. In conclusion, QUANTSIM provided a realistic context, as defined by the criteria for laboratory research discussed earlier, in which to study bargaining behavior.

IV. MEASURES

A number of performance measures were employed in the studies. The primary indices of bargaining performance were measures of bargaining outcomes. These included actual settlement values for two wage rates ("workmen" and "repairmen"), a medical insurance plan, a cost of living allowance (COLA) for each employee group, and a vacation plan. Since failure to reach agreement reflects a possible bargaining outcome, number of strikes was also considered a measure of bargaining performance.

In addition to measures of bargaining outcomes, variables related to the bargaining process were also considered measures of bargaining performance for the purposes of the studies. While differences in outcomes of negotiations are of prime importance, understanding differences in outcomes requires an understanding of the differences in the bargaining process which accompany them. Therefore, differences in the following procedural variables were examined: target point (desired settlement level), resistance point (minimally acceptable settlement level), bargaining strategy (as set by each team prior to beginning negotiations), bargaining time (total time spent negotiating), and satisfaction with bargaining outcomes. Prior to the onset of bargaining, participants were given a brief explanation of the nature and purpose of bargaining goals and strategies. They were then given an opportunity to work together in their union or management team to devise their own goals and strategies. Each team was required to list its target and resistance

point for each bargaining issue, in dollars per hour equivalents, before negotiations began. In addition, teams were required to write out their bargaining strategies. As a guide, ten possible strategies were provided (for example, "settle as quickly as possible--avoid a strike," "bargain over the total wage/benefit cost to the company before dealing with any individual issue," "trade off one issue against another," etc.). Participants were told they could choose any number of the strategies listed and were also encouraged to develop strategies of their own. Bargaining satisfaction was measured by four Likert-type items dealing with satisfaction with strategy, own performance, teammate's performance, and outcomes. A five-point response scale ranging from "very dissatisfied" to "very satisfied" was employed. The average response across all four satisfaction items provided a measure of overall satisfaction.

For purposes of exploring differences between different subject groups, several other measures were employed. A biographical data questionnaire allowed examination of differences in age, marital status, work history, education level, and various other characteristics. Another variable of interest was attitude toward unions as measured by an adaptation of a questionnaire developed by Uphoff and Dunnette (1956). The attitude measure used consisted of the first 20 items from Uphoff and Dunnette's scale, dealing with feelings about unions in general. The items which referred to specific aspects of unions and unionism were dropped, since they were appropriate only for union members. All items employed a 5-point Likert-type scale with responses ranging from "strongly agree" to "strongly disagree."

Scoring was arranged so that high scores indicate favorable attitudes toward unions.

Finally, post-bargaining questionnaires explored such issues as whether the original bargaining strategy was carried out, whether groups developed or adhered to role differentiations, amount of effort expended in preparation and actual bargaining, degree of involvement in bargaining, and perceived realism and complexity of the experimental situation.

Other issues explored in the post-bargaining questionnaires included the degree to which subjects perceived their bargaining outcomes to be within their control (skill versus chance orientation) and the extent to which subjects approached the task seriously (bargaining seriousness). The measure of skill-chance orientation consisted of 3 Likert-type items which asked to what degree outcomes were seen as determined by bargaining skill, chance alone, and the bargaining case material, respectively. Bargaining seriousness was measured by 3 items dealing with the importance to subjects of avoiding a strike, reaching their target points, and avoiding settling below their resistance points.

A modified version of the Short Form of the Job Diagnostic Survey (Hackman & Oldham, 1974) was employed as a measure of perceived complexity. Part I of the Short Form of the JDS measures the objective characteristics of a job in terms of skill variety, task identity, task significance, autonomy, feedback from the task itself and from other people, and amount of interpersonal interaction required. Part II measures affective responses to the job, including

general satisfaction, internal work motivation and specific satisfactions. Part III taps the individual's growth need strength, and Part IV yields the Motivating Potential Score, ". . . reflecting the potential of a job for eliciting positive internal work motivation on the part of employees . . ." (Hackman and Oldham, 1974). For the present study, only Part I and Part IV were used, since the goal was to measure the "job" as seen by participants rather than to measure the participants themselves. One item related to feedback from supervisors was dropped because it did not make sense in the present context. A total of 20 Likert-type items were retained. Wherever necessary, items were slightly altered to refer to the "bargaining role" instead of the "job" and to refer to the role in the past tense, since this questionnaire was completed by participants after negotiations ended. All measures may be found in Appendix C.

CHAPTER III

RESULTS

I. MANIPULATION CHECKS

Several variables were measured for the purpose of determining whether various aspects of the simulation were perceived as intended. The Job Diagnostic Survey was adapted for the purpose of determining whether or not the various complexity levels of the simulation were, in fact, perceived differently by the experimental subjects. The Motivating Potential Score (MPS), reflecting "... the potential of a job for eliciting positive internal work motivation on the part of employees" (Hackman & Oldham, 1974), was expected to vary directly with the simulation complexity level. Results, however, showed no significant differences among the three complexity levels with respect to the MPS ($F_{(2,59)}=0.21$, $p=0.8132$). Consideration of the variables which comprise the MPS suggests that this score may not have been appropriate for measuring the types of differences which were designed into the three simulation complexity levels. The MPS reflects skill variety, task identity, task significance, autonomy, and feedback from the task itself. While these variables may be important in measuring motivation potential, the complexity manipulation was not designed to directly affect subjects' perceptions along any of these dimensions. Rather, the complexity manipulation was intended to affect involvement and perceptions of realism.

A more meaningful measure of the perceived differences among complexity levels is the perceived realism of the simulation as reported by subjects in each complexity condition. Subjects were asked "To what degree do you think that your bargaining session was similar to actual union-management negotiations?" Results showed a significant difference among the complexity conditions ($F_{(2,59)}=5.61$, $p=0.0059$) with both the high and moderate complexity subjects reporting greater realism than the low complexity subjects (Duncan Multiple Range tests, $p < 0.10$). The moderate and high complexity levels did not differ significantly with respect to perceived realism (see Table 5, Appendix A). Nonetheless, the results do indicate that the addition of "real world" factors to the simplified version of the bargaining simulation did affect subjects' perceptions of the similarity between the simulation and actual union-management negotiations.

In both the moderate and high complexity conditions, subjects were assigned roles as either "chief negotiator" or "analyst." In order to assess the effectiveness of these assignments, subjects were asked to indicate how their bargaining team divided the task between bargaining team members. Though four response categories were provided (see Table 6, Appendix A), the most appropriate comparison is between those reporting adherence to role assignments (response category 2) and those reporting some other method of dividing the task (response categories 1, 3, and 4 combined). A chi-square test indicated significant overall differences among the complexity conditions with regard to these two categories ($\chi^2_{(2)}=11.2$, $p < 0.01$). Further

analysis indicated that subjects in the moderate complexity condition adhered to assigned roles more often than high complexity subjects ($\chi^2_{(1)}=3.15$, $p < 0.01$) and followed the negotiator-analyst pattern more often than low complexity subjects (the latter not having received role assignments of any sort) ($\chi^2_{(1)}=9.37$, $p < 0.01$). High complexity subjects, however, showed no greater propensity to follow the negotiator-analyst pattern than did low complexity subjects ($\chi^2_{(1)}=1.19$, $p > 0.25$). Thus, the division of labor manipulation appears to have been more effective for moderate complexity subjects than for subjects in the high complexity condition. Even in the moderate complexity condition, however, only about 32 percent of the subjects report adherence to role assignments. One possible explanation for the failure of the division of labor manipulation to be effective is that subjects assigned to the analyst role may have become so involved in the negotiating process that they abandoned their assigned role, which allowed them to speak only to their teammate. During debriefing, some subjects indicated that they had forgotten their assignments (though role assignments were stressed by the experimenter prior to the onset of bargaining) while others stated that they had difficulty keeping out of the exchange with the bargaining opponent. In addition, it may be that the analyst role carried too few formal tasks to sufficiently occupy subjects. In any case, the primary purpose of the complexity manipulation was to increase the realism of the simulation. As reported above, perceived realism was higher in the moderate and high complexity conditions than

in the low complexity condition. The division of labor manipulation, therefore, does not appear to have been crucial.

According to Weick (1965), real organizations generally provide their members with ambiguous feedback, whereas simulations often provide clear, concise performance feedback. The JDS provides an opportunity to determine the degree to which subjects feel that the bargaining simulation offered clear feedback. Analysis of the "Feedback From The Task" scale of the JDS indicated that subjects judged the simulation to provide only a moderate level of feedback. On a scale ranging from 1.00 ("very little feedback") to 7.00 ("very much feedback"), the mean response was 4.35 ($N=396$). No significant differences in Feedback scores were found either among complexity levels ($F_{(2,59)}=1.63$, $p=0.2051$) or among subject types ($F_{(2,55)}=0.14$, $p=0.8718$). It appears that even in the low complexity condition the simulation is sufficiently complex to provide reasonably ambiguous performance feedback.

In summary, the manipulation checks employed indicated that subjects in the moderate and high complexity conditions viewed the bargaining simulation as more realistic than did subjects in the low complexity condition. Furthermore, feedback levels were reported to be moderate, thus the inordinately clear feedback common in simulation tasks was avoided. On the negative side, however, the division of labor manipulation appears to have been ineffective since most subjects reported that both members of their bargaining team did equal amounts of bargaining and analysis. The failure of this manipulation can probably be attributed to a combination of high subject

involvement in the bargaining process and a lack of sufficient role definition for the analyst role.

II. EXPERIMENTAL RESULTS

A. Comparison of Subject Types

The first issue to be explored concerned expected differences among three types of research subjects. Specifically, greater knowledge and experience in fields related to union-management relations were expected to lead to more serious bargaining, more complex bargaining strategies, and longer bargaining times. Differences in bargaining outcomes were expected as well, though the precise nature of such differences could not be predicted. A total of 21 groups of undergraduates, 21 groups of graduate students, and 18 groups of union members were employed.⁴

A multivariate analysis of variance (MANOVA) showed that the three groups did in fact differ with respect to the outcomes (i.e.,

⁴Since the intent of this research was to maximize the probability of identifying differences among the experimental conditions if, indeed, they do exist, statistical power is of great importance. Therefore, following guidelines set forth by Cohen (1977), it was determined that a sample size of 21 groups per cell would provide power of no less than 0.80 (i.e., an 80 percent chance of identifying differences if they exist) for all of the proposed statistical tests, assuming that effects of moderate size are expected, and given the criterion of statistical significance is set at an alpha level of 0.10. Due to expected difficulties in recruiting subjects, it was decided to use relatively small sample sizes and compensate by employing a relatively high alpha level. While the 0.05 and 0.01 alpha levels are recognized as traditional, the exploratory nature of the present studies and the importance of achieving sufficient statistical power appeared to justify a relatively high probability of making a Type I error. Thus, the 0.10 alpha level was employed in determining statistical significance in all statistical tests throughout the studies reported here.

settlement levels) of their bargaining ($F_{(12,74)}=2.73$, $p=0.0042$ (see Table 19, Appendix A). Further exploration by means of multiple discriminant analysis, as suggested by Borgen and Seling (1978), indicated that all bargaining issues except vacation pay contributed to the overall difference (see Table 20, Appendix A).

Another way of viewing the bargaining results is in terms of the total cost of the contract. When the individual contract items were combined to yield two wage/benefit package figures (one package consisting of wages, insurance, cost of living allowance, and vacation pay for "workmen", the other made up of similar figures for "repairmen"), no significant differences were found among the three subject groups ($F_{(4,82)}=1.57$, $p=0.1903$). In other words, all three groups negotiated comparable contracts in terms of the total cost to the company for keeping an employee on the payroll.

Thus, the differences among the groups must reflect different preferences for particular types of compensation. Indeed, Duncan Multiple Range tests for each of the wage and benefit issues revealed that union members tended to negotiate significantly higher wages than did undergraduates for both workmen and repairmen. Wages negotiated by graduate students were at intermediate levels in both cases and did not differ significantly from rates negotiated by either of the other groups. Both union members and graduate students negotiated greater hospital and medical benefits for employees than did undergraduates, while not differing significantly from each other. On the COLA items, however, undergraduates and graduate students were both more generous than were the union members, the two student groups not differing

significantly on either COLA item. The only item apparently receiving equal weight from all types of subjects was vacation pay; no significant intergroup differences were found on this issue. In short, undergraduates tended to forego high wages and insurance benefits in favor of attractive cost of living allowances, while union members focused on the wage items and insurance protection and accepted a relatively modest hedge against inflation. Graduate students appear to have sought a "balanced" contract, negotiating moderate settlements on all issues and differing significantly from undergraduates only in terms of insurance coverage and from union members only on the COLA items.

The differences in contract provisions as negotiated by the various groups may be explainable in terms of the demographic characteristics of the individuals involved. For example, the magnitude of the company payment toward hospital and medical insurance was found to be directly related to the average age of the bargaining group members ($r=0.35$, $p=0.0174$). Such a relationship is not surprising, since older employees might be expected to feel a greater need for security-related benefits than their younger counterparts. Furthermore, most union members were married, therefore being more likely than students to have family responsibilities such as dependent children. Nealey (1963) found employee preference for hospital insurance to be directly related to the respondent's number of dependent children. Turning to the cost of living allowance, age was again found to be related to the contract provisions. However in this case the relationship was inverse, i.e., older negotiators tended to

settle on a lower workmen COLA ($r=-0.43$, $p=0.0028$) and a lower repairmen COLA ($r=-0.47$, $p=0.0012$). It appears that older negotiators were willing to trade off relatively immediate compensation in the form of cost of living raises for greater long-range security in the form of medical insurance, a general pattern which parallels that found by Nealey (1963).

The high wage rates negotiated by union members reflects the importance traditionally placed on wages by unions (Brinckloe & Coughlin, 1977), while undergraduates settled for approximately \$0.25 less per hour on the average for both workmen and repairmen. This difference may be, at least in part, due to the fact that undergraduates were accustomed to working for relatively low pay while the union members involved in the study were employed in a high-paying industry. The bargaining pattern followed by the union members may be most meaningful in terms of bargaining in the "real world" since 86.1 percent of the union members had at some time held an office in their union and a full 50 percent of the union members had participated in actual contract negotiations. Only one undergraduate and three graduate students had ever held a union office while none of the undergraduates and three of the graduate students reported previous participation in actual negotiations.

Note that graduate students tended to fall between undergraduates and union members in terms of age, marital status, employment status, and other such characteristics. It is therefore particularly interesting that the results of graduate student bargaining tended to be intermediate to the other two groups, seldom

differing significantly from either undergraduates or union members. In terms of the outcomes of negotiations, graduate students appear to be halfway between the "student world" and the "real world." Since the graduate students participating in the study were all enrolled in management-oriented graduate programs, it is also worth noting a study of managerial compensation preferences conducted by Mahoney (1964). Mahoney reported that

The relatively close parallel between managerial preferences and perceptions of current compensation practice, even when these perceptions are in error, raises the suspicion that managers have no strong preference for alternative forms of compensation as long as protective compensation is perceived as adequate and the major portion of compensation is provided in the form of salary. In short, fine distinctions among alternative forms of compensation probably are considerably less important in managerial motivation than is often suggested" (Mahoney, 1964, p. 144).

The tendency for graduate students to settle on relatively "balanced" contracts with respect to the various compensation items may indicate that these graduate students would serve as better surrogates for managers than for union members, a conclusion which would certainly be supported by their career choices and by the fact that nearly 42 percent of the graduate students reported having held a management position at some time.

Another aspect of the bargaining outcome has to do with the frequency of strikes. Only two of twenty-one undergraduate bargaining groups (9.52 percent) were unable to reach an agreement while one-third of both the graduate student groups (seven of twenty-one) and the union member groups (six of eighteen) failed to sign contracts before the strike deadline. Though an overall test of the differences

among the three groups did not yield statistical significance ($\chi^2_{(2)}=4.127$, $p=0.127$), a number of factors suggest that the differences between undergraduate bargaining groups and the other two types of groups deserve some attention. First, the absolute differences are relatively large and may indicate some practical significance in terms of the findings of bargaining research using undergraduates as subjects. Secondly, the experimenter observed behaviors among undergraduates which were not present with bargaining groups drawn from the other two populations. More specifically, several undergraduate bargaining groups were observed to be more interested in discussing their social calendars, classes, professors, and the like than in negotiating a contract. Based on conversations overheard by the experimenter, it appears that some of these groups agreed on contract provisions within the first few minutes of bargaining, then spent a "respectable" amount of time in social discussion before announcing their "hard-fought" contract settlement. Such behavior was never observed among graduate students or union members, and may be relevant to the frequency of strikes. Though no significant differences were found between undergraduates and graduate students in self-reported "bargaining seriousness", it is apparent that at least some of the undergraduate student groups did not approach the bargaining task seriously (a Duncan Multiple Range test indicated that union members were more serious bargainers than either undergraduates or graduate students).

Thus, with respect to their relatively casual attitude toward the task, undergraduates were distinguishable from both of the other

types of bargainers. Lack of a serious attitude toward bargaining might be expected to lead to a relatively low number of strikes in the bargaining simulation, since subjects were free to go whenever they concluded their negotiations. That is, the path of least resistance for experimental subjects was to settle quickly. Thus, bargainers whose prime interest was to get out of the laboratory quickly would be expected to favor any contract terms over serious bargaining which could possibly lead to lengthy negotiations and the possibility of a strike. Although a quick strike would have accomplished the same end, undergraduates were probably constrained from striking immediately by a second factor which made them somewhat unique as experimental subjects. Unlike the graduate students and union members, undergraduate students were subject to a large experimenter-subject status differential since the experimenter was a graduate student, a management instructor, and older than most of the undergraduate subjects. Graduate students were in a position to view the experimenter as a peer and union members could view the experimenter as an outsider having no status or power within their organization. Undergraduates, however, may have been subject to an experimenter effect which resulted in a reluctance to strike due to the subjects' perceptions of the experimenter's expectations. Since undergraduates appear to be unique subjects with respect to both their attitudes toward the task and the experimenter-subject status differential, it seems reasonable to view differences in the frequency of strikes in terms of undergraduate and "non-undergraduate" groups. Combining graduate student and union member categories yields a significant difference in strike

frequency between undergraduate and non-undergraduate bargaining groups ($\chi^2_{(1)}=4.127$, $p < 0.05$).

Further evidence of the relatively low degree of seriousness with which undergraduates approached the bargaining task appears in the comparison of average bargaining times. Significant differences in bargaining times were revealed by an ANOVA ($F_{(2,56)}=8.95$, $p=0.0004$). Follow-up analysis (Duncan Multiple Range test) showed that undergraduate bargaining groups spent significantly less time in negotiations ($\bar{x}=44.095$ minutes) than either graduate student groups ($\bar{x}=57.952$ minutes) or union member groups ($\bar{x}=64.176$ minutes). Bargaining times for graduate students and union members did not differ significantly.

As stated earlier, self-report measures of bargaining seriousness showed union members to be more serious negotiators than either of the other groups. Experimenter observations, however, cast some doubt on the validity of the undergraduates' estimates of their own interest in the task. Similarly, self-report measures of the amount of effort invested in negotiations indicated that all three groups exerted approximately equal effort ($F_{(2,42)}=0.05$, $p=0.9477$). This result conflicts directly with the observations of the experimenter discussed earlier, but can be easily explained in terms of a desire on the part of undergraduates to make a good appearance and avoid a negative evaluation by the experimenter.

Turning to subjects' perceptions of the bargaining simulation itself, a significant overall difference was found among the groups with respect to perceived realism ($F_{(2,55)}=6.07$, $p=0.0042$). Further

analysis (Duncan Multiple Range test) revealed that union members tended to see the simulation as more realistic ($\bar{x}=3.250$) than did the undergraduates ($\bar{x}=2.548$) or the graduate students ($\bar{x}=2.544$). The latter two groups did not differ significantly.

In addition to the differences in perceived realism, groups were found to differ in terms of their perceptions of the determinants of performance in the simulation (skill-chance orientation). A one-way ANOVA ($F_{(2,55)}=8.35$, $p=0.0007$) revealed an overall difference in the degree to which the three groups viewed the bargaining outcomes as skill-determined or chance-determined. This dimension was measured by a three-item scale where low scores indicate a skill-oriented view of the task and high scores indicate a chance-oriented view. The possible range of scores was from a low of 3 to a high of 15. Union members were found to have a significantly more skill-oriented view of the bargaining ($\bar{x}=8.58$) than either undergraduates ($\bar{x}=9.86$) or graduate students ($\bar{x}=10.488$). The Duncan Multiple Range test revealed no differences between undergraduates and graduate students along this dimension, however. The relatively strong skill orientation of the union members is consistent with their tendency to view the simulation as realistic, their relatively long bargaining times, and their serious approach to the bargaining.

Another perceptual variable which was examined was the perceived significance of the task. No intergroup differences were found.

Since no role assignments were made in the subject-type comparison, division of labor can be viewed as a process measure in this

study. While it was expected that union members would be more likely to divide the bargaining task into distinct roles, a Chi-Square test showed no differences in the division of labor among the three subject groups ($\chi^2_{(2)}=2.013$, $p > 0.25$). Most of the participants (62.72 percent) from all three subject groups reported that their bargaining teams chose to divide both the negotiating and the analysis tasks equally between the two team members. A number of factors may have contributed to the tendency for participants to prefer this approach to the division of tasks. First, none of the subjects brought any specialized skills to the bargaining situation, whereas high level union and management teams in real situations might be expected to include representatives from a variety of specialties (e.g., attorneys, accountants, wage and salary administrators, economists, and so on). In the absence of specialized skills, the advantages of task specialization are greatly diminished. This is particularly true where, as in the bargaining teams used here, all group members are equally qualified to carry out any component of the task. Furthermore, the subjects in all groups were told that the bargaining exercise should be a learning experience for them. As such, they may have felt it important to participate in all aspects of the bargaining in order to gain as much as possible from the exercise. In retrospect, it is, in fact, somewhat surprising that nearly 40 percent of the participants reported some form of division of labor despite the fact that no such instructions were given.

Contrary to the experimenter's expectations, union members reported less complex bargaining strategies than their undergraduate

and graduate student counterparts. Among union member bargaining groups, "management" teams reporting a strategy listed an average of 1.50 strategy items and "union" teams reporting a strategy listed 1.38 items on the average. These figures were significantly lower (Duncan Multiple Range test) than the corresponding figures for undergraduate groups (2.24 items for "management" teams and 2.19 items for "union" teams) and graduate student groups (2.19 items for "management" teams and 2.14 items for "union" teams). Undergraduate and graduate student bargaining teams did not differ significantly with respect to the number of strategy items listed. The union member-student differences may be a function of the educational levels of the individuals involved. Both the undergraduates and the graduate students were relatively highly educated whereas the union members generally had considerably less formal education. Also, since union members were given their instructions and set their strategies in a large-group setting, confusion in the room might have detracted from their understanding of the strategy-planning phase of the exercise and prevented them from concentrating on the task as much as they might otherwise have done.

Only a tentative content analysis of bargaining strategies may be made, since strategy choices were diverse and the number of union member groups reporting any given strategy was low. Tables 21 and 22 (Appendix A) show the percentage of bargaining groups selecting each of the ten alternative strategies provided in the bargaining instructions. Since many of the union member groups did not report a strategy, the tables reflect the percentage of groups reporting a

strategy which selected a particular alternative. The data indicate the undergraduate bargaining groups showed considerable concern for avoiding a strike. Approximately 33 percent of the management teams and 24 percent of the union teams selected alternative 4, "settle as quickly as possible -- avoid a strike." Furthermore, among undergraduate management teams, nearly 30 percent chose to start with the least important issues and settle the easy issues quickly (alternative 9), an approach which seems to be in keeping with the desire to settle quickly. An equal number of management teams selected alternative 2, "reach a settlement close to the average of all industries", a strategy which appears to focus on being "fair" to all parties. In addition to alternative 4, undergraduate union teams chose to bargain over each individual issue in a pre-specified order (nearly 48 percent selected alternative 5). Reaching a settlement close to the industry average was endorsed by over 38 percent of the undergraduate union teams, again indicating a preference for "fairness." The issue of fairness, in fact, seemed to constitute a theme running throughout the undergraduate bargaining sessions. More than the other subject groups, undergraduates appeared to measure offers and demands against a standard of fairness.

Turning to graduate student bargaining teams, management teams again chose to follow the industry average as a guide to bargaining, with over 42 percent of the teams selecting alternative 2. Graduate students, however, came across as more of the "horse trader" than their undergraduate counterparts. Nearly 30 percent chose to trade one issue against another (alternative 7) and an equal number

indicated a desire to minimize the settlement cost to the company (alternative 3). Among union teams, over 52 percent decided to bargain over each individual issue in a pre-specified order (alternative 5), much like the undergraduate teams. Only about 14 percent chose to follow the industry average as a guide to bargaining. Approximately 24 percent preferred to follow the industry leader in setting bargaining goals. Nearly 24 percent chose to trade one issue against another. As compared to undergraduate bargaining strategies, graduate student strategies tend to reflect slightly more self-interest and less concern for fairness.

Among union member teams, management bargaining teams were split between following the industry average (about 19 percent) and following a particular example (25 percent) as a guide to bargaining. Approximately 19 percent of the management teams selected alternative 4, indicating a desire to settle quickly and avoid a strike. Twenty-five percent of the teams were apparently more concerned about maximizing their gains, however, selecting alternative 10, "Start by trying to determine your opponent's resistance points before making any concessions." Among union negotiating teams, 25 percent chose to follow the industry average (alternative 2), while nearly 38 percent chose a particular industry to use as a reference point in bargaining (alternative 1). Only about 12 percent selected alternative 4, which identifies strike avoidance as the primary goal. Determination of the opponent's resistance points (alternative 10) was endorsed by 25 percent of the union negotiating teams, indicating that many teams were concerned about maximizing their

gains. Finally, 25 percent of the teams picked alternative 9, calling for rapid settlement of the "easy" issues and leaving the "difficult" issues until last. Like the graduate student bargaining teams, union-member bargaining teams tended to show more self-interest and less concern for "fairness" than did the undergraduate bargainers. Given that contract negotiation is generally considered a "distributive bargaining" process in which each party seeks to promote its own interest, the strategies formulated by the various groups of negotiating teams tended to characterize the union-member and graduate student negotiating teams as more realistic bargainers than their undergraduate counterparts.

Analysis of the target and resistance points set by the three types of bargaining groups revealed some significant differences among undergraduate, graduate student, and union member bargaining groups. The differences which appeared, however, are scattered and follow no discernible pattern (see Tables 23 and 24, Appendix A). Applying stepwise multiple regression using a backward elimination procedure, it was found that the target points set by "management" negotiating teams and the resistance points set by "union" negotiating teams were predictive of actual settlement levels for the "workmen" COLA issue ($R^2=0.458$, $p<0.0001$). Furthermore, "management" target and resistance points and "union" resistance points were found to predict settlement levels for the "repairmen" COLA issue ($R^2=0.533$, $p<0.0001$). For the other bargaining issues, however, target and resistance points did not predict actual settlement levels. It is interesting to note that the COLA issues were the only ones for which

no concrete data were provided in the case material. That is, the data representing contract provisions from other industries included specific figures for all other issues. For the COLA issues, the data specified only that a given industry did or did not provide a cost of living allowance. For this reason, bargaining over the COLA issues was probably less restricted by the data provided in the case material and therefore more directly influenced by the bargaining goals set by the negotiators themselves.

Four items were used to assess participants' satisfaction with their bargaining (see Appendix A, Post-Negotiation Questionnaire, Items 1-4). Responses were made using a Likert-type scale with values from 1 (very dissatisfied) to 5 (very satisfied). Overall satisfaction was measured by calculating the average response across all four items. No significant differences in overall satisfaction were found among undergraduate ($\bar{x}=3.96$), graduate student ($\bar{x}=3.94$), and union member ($\bar{x}=3.88$) negotiators. Turning to the individual satisfaction items, the three types of bargainers were also found to be equally satisfied with the outcomes of their bargaining, their own performance in negotiations, their bargaining strategies, and the bargaining performance of their teammates. On all of these dimensions, negotiators of all three types indicated that they were generally satisfied.

Finally, in an effort to identify the determinants of the time required to reach a settlement, a number of variables were entered into the stepwise multiple regression using a backward elimination procedure with the criterion for inclusion set at $p=0.10$. The

complete set of variables entered as predictors included age, attitude toward unions, perceived realism of the simulation, bargaining seriousness, effort, the degree to which the bargaining task was seen as skill-determined, the Motivating Potential Score for the task, and the perceived significance of the bargaining task. Results showed that age, perceived realism, bargaining seriousness, and effort were major determinants of bargaining time ($F_{(4,44)}=8.30$, $p < 0.0001$, $R^2=0.453$). With the exception of age, these variables indicate that one major determinant of bargaining time is the degree to which the participants feel personally involved in the bargaining process.

Based on bargaining seriousness, observed effort, and perceived realism of the bargaining task, union members would appear to have been slightly more involved in the task than graduate students and considerably more involved than undergraduates. Accordingly, union members showed the longest bargaining times, in absolute terms, and differed significantly from undergraduates in terms of bargaining time. Such differences should not be surprising in light of the practical significance of the bargaining process to union members and its relative lack of practical meaning for students.

It is precisely these types of differences which raise the question of whether students can serve as satisfactory subjects for research on the process of collective bargaining. Certainly, if research using students as subjects is to be meaningful, then it would appear to be essential that the bargaining simulations employed be designed to instill in the participants a greater level of involvement than that demonstrated by the undergraduates who took part in this

study. Hence, the question arises as to whether changes in the design and complexity of the bargaining simulation can produce changes in the level of task involvement and bargaining behavior of undergraduate subjects.

B. Comparison of Complexity Levels

The second area addressed was the issue of bargaining simulation complexity. By increasing the complexity of the simulation, it was expected that subject involvement could be increased, with an accompanying change in bargaining behavior and outcomes. It was proposed that bargaining behaviors and outcomes vary as a function of the complexity of the simulation employed. While specific differences in outcomes could not be predicted, increased complexity was expected to influence the bargaining process by producing longer bargaining times, greater effort, a more serious approach to bargaining, and greater perceived realism. In order to examine these predictions, the results of the undergraduate negotiations already described were compared with the results of undergraduate negotiations carried out in moderate and high complexity simulations. A total of 21 groups participated in the low and moderate complexity conditions, while 20 groups participated at the high complexity level (see Footnote 4).

Looking first at the outcomes of the six bargaining issues, a multivariate analysis of variance showed that the three levels of complexity did produce differences in settlement levels ($F_{(12,104)}=1.76$, $p=0.0647$) (see Table 25, Appendix A). Multiple discriminant analysis

indicated that significant differences on both wage issues and both COLA issues (i.e., settlement levels for both "workmen" and "repairmen") accounted for the overall differences found in the multivariate analysis (see Table 26, Appendix A).

The total cost of the contracts negotiated in the three complexity levels was examined. In spite of the differences found in the individual issues, when the items were combined to yield wage/benefit package figures for "workmen" and "repairmen", no intergroup differences were revealed ($F_{(4,110)}=0.65$, $p=0.6278$). In terms of the total cost to the company for keeping an employee on the payroll, then, all three groups of negotiating teams settled on comparable contracts. Given the overall differences in individual contract items, this indicates that the three groups displayed differing preferences for various types of compensation. Duncan Multiple Range tests reveal that negotiators in the moderate complexity condition settled on significantly higher wages for workmen and repairmen than negotiators in either of the other two complexity conditions. In absolute terms, low complexity bargainers accepted the lowest wage figures, though no significant differences between low and high complexity conditions were found.

Turning to the other issues for which significant overall differences were found, Duncan Multiple Range tests revealed that low complexity bargainers settled at significantly higher levels than did their moderate complexity counterparts on both COLA issues. In both cases, high complexity bargainers settled at intermediate levels, not differing significantly from either of the other groups. Thus, low

complexity bargainers tended to accept relatively low wages while settling on relatively high cost of living allowances. In contrast, moderate complexity bargainers accepted relatively low COLA's but negotiated high wages. High complexity negotiating teams reached moderate agreements on the COLA items while settling at relatively low wage levels.

Though there is apparently no simple explanation for these findings, the low wage settlements among high complexity groups are understandable in light of the fact that these subjects were directly affected by the outcomes of their bargaining. It is, in fact, somewhat surprising that the wage/benefit package figures were not lower for the high complexity groups. It may be that the conservative influence exerted by the requirement of living with the contract was counteracted by some pressure in the opposite direction which was common to the moderate and high complexity levels. Some support for this notion can be found in the fact that in spite of the lack of statistically significant differences in wage/benefit packages, high complexity groups negotiated the lowest wage/benefit packages (in absolute terms) for both "workmen" and "repairmen" while moderate complexity groups consistently negotiated the most generous wage/benefit packages. In both cases, moderate complexity group settlements were approximately 3.5 percent higher than settlements reached by the high complexity groups.

A second aspect of the bargaining outcomes deals with the number of negotiating teams that chose to take a strike. Only two of the teams in any of the three conditions ended their negotiations with

a strike. Though both of these teams were in the low complexity condition, no significant intergroup differences were found.

Upon close scrutiny, however, it appears likely that the paucity of strikes may have had different origins in the moderate and high complexity conditions than in the low complexity condition. As was stated earlier, undergraduates in the low complexity condition showed little involvement in the bargaining process and appeared to take the quickest route out of the laboratory. Apparently due to perceived constraints on the ability to strike, this route was generally a fast settlement even though no strike penalty was threatened or imposed on these subjects. Subjects in the higher complexity conditions, however, were observed to take the bargaining quite seriously. Furthermore, strike penalties were clearly set forth for these subjects. Thus, it is conceivable that low complexity subjects tended to reach agreements because they were relatively unconcerned about the contract provisions and because signing a contract seemed to be the fastest and most acceptable method of getting out of the laboratory. Subjects in the other complexity conditions, however, probably managed to reach agreement because they were sufficiently involved in the bargaining to stick around until a satisfactory contract could be signed and because failure to reach an agreement would result in strict penalties. While no direct test of this argument can be made, a look at the bargaining process itself may shed some light on the question.

Perhaps one of the most important process variables is the time spent in negotiations. Clear differences in bargaining time were

found among the three complexity levels ($F_{(2,57)}=13.12$, $p < 0.0001$). A Duncan Multiple Range test revealed that low complexity bargaining teams spent the least time in negotiations ($\bar{x}=44.10$ minutes), moderate complexity subjects spent the most time ($\bar{x}=63.43$ minutes), and high complexity teams were intermediate in terms of bargaining time ($\bar{x}=51.05$ minutes). All intergroup differences are significant at the $p=0.10$ level. The relatively short bargaining times of the low complexity teams, of course, were expected. The "reversal" of the moderate and high complexity groups, however, came as a surprise. One possible explanation for this departure from the expected result lies in the fact that high complexity teams bargained from the vantage point of their simulated "companies" in the context of the management simulation since their "companies" would be required to pay the wages and benefits which they negotiated. Many of the participants in this condition brought with them information about their company's "ability to pay" based on current financial standing. In the moderate complexity condition, there was no requirement that the negotiated wages and benefits be paid by the simulation companies involved. Thus these groups probably negotiated from the vantage point of the information contained in the bargaining case material. If this is, indeed, true, then both moderate and high complexity teams could be expected to have relatively high motivation to produce a favorable contract. However, only the high complexity teams would have had detailed data which could serve as a criterion for judging the desirability of a settlement at any given level, since only they could refer their bargaining progress back to the current standing and

financial status of their "companies." Having strong incentive to reach a favorable settlement and only vague guidelines as to what might constitute "favorability", moderate complexity bargaining teams might reasonably be expected to engage in relatively lengthy negotiations.

Significant overall differences in self-reported bargaining seriousness ($F_{2,57}=6.22$, $p=0.0036$) confirm the experimenter's observations. A Duncan Multiple Range test indicates that low complexity bargainers took the process less seriously than participants in either of the other two conditions. Moderate and high complexity bargaining participants did not differ from each other in terms of bargaining seriousness. Similar results were found with respect to self-reported effort. Participants in the low complexity condition reported having put forth less effort than subjects in the other two conditions. Furthermore, effort was found to be directly related to perceived realism ($r=0.459$, $p=0.002$).

Although the moderate and high complexity conditions allowed participants to request mediation service and to bring unfair labor practice charges against their opponents, no requests or charges were made.

No differences were found among conditions with respect to the perceived determinants of performance (skill versus chance) in the simulation ($F_{(2,59)}=0.09$, $p=0.9149$). On a scale ranging from 1 (skill-determined) to 5 (chance-determined), the average response across all conditions was 3.266, indicating a slight tendency toward a chance-determined view of the bargaining task. Interestingly,

self-reported effort was found to be directly related to the degree to which the task was seen as skill-determined ($r=0.49$, $p < 0.0001$) across all three complexity conditions, thus lending credence to the latter measure.

Tables 27 and 28 (Appendix A) show the percentage of bargaining groups in each of the complexity conditions choosing each of the ten alternative strategies provided in the bargaining materials. In general, few differences in bargaining strategy were either indicated by the alternatives selected by the bargaining teams or observed by the experimenter. The strategies of bargaining teams in all conditions tended to be characterized by a high degree of concern for avoiding a strike, a desire to be "fair" to both parties, and a preference for negotiating each issue individually rather than bargaining over a wage/benefit package.

No significant differences were found in the complexity of the strategies set by either "union" teams ($F_{(2,59)}=0.27$, $p=0.7618$) or "management" teams ($F_{(2,59)}=0.06$, $p=0.9405$), as defined by the number of strategy items selected. A rough content analysis of the bargaining strategies shows considerable similarity in the types of strategies set under the three complexity conditions. As was stated earlier, low complexity bargaining teams demonstrated a high degree of concern for avoiding a strike, with approximately 33 percent of the management teams and 24 percent of the union teams selecting alternative 4, "settle as quickly as possible -- avoid a strike." Bargaining teams in the moderate and high complexity conditions endorsed the same strategy in equal or even greater numbers. Among

"management" bargaining teams, approximately 33 percent of the moderate complexity teams and 45 percent of the high complexity teams selected alternative 4. Of the "union" bargaining teams, nearly 62 percent of the moderate complexity teams and 55 percent of the high complexity teams emphasized strike avoidance.

Following industry averages as guidelines for bargaining was a popular strategy among both "union" and "management" bargaining teams and at all three levels of bargaining complexity. Alternative 2, "reach a settlement close to the average of all industries", was chosen by approximately 29 percent of the low complexity "management" teams, 38 percent of the moderate complexity "management" teams, and 25 percent of the high complexity "management" teams. Corresponding percentages for "union" teams were 38 percent, 38 percent, and 30 percent for the three complexity levels, respectively.

Alternative 5, "bargain over each issue in a specified order", was also endorsed by relatively large proportions of negotiating teams in all complexity levels. Approximately 24 percent of the low and moderate complexity "management" teams and 45 percent of the high complexity "management" teams chose this approach to bargaining. Approximately 48 percent of the low and moderate complexity "union" teams and 60 percent of the high complexity "union" teams listed alternative 5.

The only strategy item selected by a high percentage of low complexity "management" bargaining teams which received considerably less attention from teams in the other complexity conditions was alternative 9, "start with the least important issues . . ."

Approximately 29 percent of the low complexity teams selected this item while only about 10 percent of the teams in the other complexity conditions opted for this approach. The opposite approach (alternative 8) was chosen by about 10 percent of the low and moderate complexity "management" teams and 20 percent of the "management" teams in the high complexity condition. Among "union" teams, alternative 9 was selected by 19 percent of the low complexity teams, about 14 percent of the moderate complexity teams, and none of the high complexity teams. Alternative 8 was picked by 19 percent, 14 percent, and 15 percent of the teams in the three complexity conditions, respectively.

A multivariate analysis of variance yielded no significant overall differences among groups with respect to resistance points ($F_{(24,96)}=1.39$, $p=0.1353$). Applying MANOVA to the target points, however, revealed significant overall differences among complexity conditions ($F_{(24,96)}=1.79$, $p=0.0245$) (see Tables 29 and 30, Appendix A). Further exploration with multiple discriminant analysis revealed that the overall differences in target points can be attributed to differences in the targets set by both "union" and "management" for both COLA issues and in the targets set by "management" for the hospital insurance issue. Settlement levels for the wage issues were not significantly predictable from the respective union/management target and resistance points (workmen wage: $F_{(4,57)}=0.48$, $p=0.7504$; repairmen wage: $F_{(4,57)}=0.11$, $p=0.9773$). Target and resistance points for the various benefit issues did predict settlement levels for the benefit package, however (workmen benefits: $F_{(4,54)}=5.21$,

$p=0.0013$, $R^2=0.278$; repairmen benefits: $F_{(4,54)}=7.19$, $p=0.00001$, $R^2=0.347$).

No significant differences in overall satisfaction were found among the low complexity ($\bar{x}=3.96$), moderate complexity ($\bar{x}=4.00$), and high complexity ($\bar{x}=4.10$) negotiators. Similarly, the three groups of negotiators were found to be equally satisfied with the outcomes of their bargaining, their own performance in negotiations, their bargaining strategies, and the bargaining performance of their teammates. Negotiators in all three conditions indicated that they were generally satisfied in all four of the above areas.

In order to identify some possible determinants of bargaining time, stepwise multiple regression was applied, using a backward elimination procedure with the criterion for inclusion set at $p=0.10$. The variables employed as predictors in the regression included age, attitude toward unions, perceived realism of the simulation, bargaining seriousness, effort, the degree to which the bargaining task was seen as skill-determined, the Motivating Potential Score for the task, and the perceived significance of the bargaining task. Perceived realism was the only variable to hold up as a predictor of bargaining time ($F_{(1,58)}=8.47$, $p=0.0051$, $R^2=0.127$). As was stated earlier, subjects in the high and moderate complexity conditions reported higher perceived realism than did participants in the low complexity condition.

CHAPTER IV

SUMMARY AND CONCLUSIONS

I. STUDENTS VERSUS "REAL PEOPLE" AS RESEARCH SUBJECTS

Undergraduates, graduate students, and union members were found to differ in several aspects of their bargaining. Analysis of settlement levels revealed that total wage/benefit costs were comparable for the three groups of subjects. Significant differences were found among subject types, however, with respect to the preferred mix of wages and specific benefits. In terms of the generalizability of research results, these qualitative differences in bargaining outcomes are probably more troublesome than a constant quantitative differential would be. The existence of qualitative differences implies that different types of subjects respond to bargaining situations in unique ways which reflect their own needs and values. Certainly, such a postulate is not new to the field of psychology. As Ruch (1967, p. 309) points out:

A number of experiments have shown a relationship between the individual's needs and values and his perception of the people and objects in his environment.

Furthermore, that college students and union members exhibit different needs and values should surprise no one. Such differences were clearly displayed in the political demonstrations of the late 1960's and early 1970's.

In addition to differences in bargaining outcomes, the three subject-types employed in this study also differed in their

perceptions of the bargaining simulation. Specifically, union members tended to see the simulation as more realistic and skill-determined than either group of students. Skill-orientation and perceived realism were found to be significantly correlated with self-reported effort ($r=0.39$, $p=0.0025$ and $r=0.37$, $p=0.0035$, respectively). Hence, differences in perceptions among the subject groups might be expected to affect the bargaining process.

Finally, two aspects of the bargaining process were found to differ across subject types. Content analysis of bargaining strategies showed that union members and graduate students tended to exhibit more self-interest and less concern for "fairness" than did undergraduate negotiators. Taken together with the differences in perceived realism and skill orientation, the differences in strategy indicate that union members and undergraduate students had distinct interpretations of the experimental task.

Regression analysis indicated that differences in age, perceived realism, bargaining seriousness, and effort help to explain the wide gap between undergraduates and other subjects in the amount of time spent in negotiations. While graduate students and union members did not differ significantly in bargaining time, union members spent approximately 45 percent more time bargaining than did undergraduates.

It should be pointed out that, like any research, this study suffered from certain flaws and limitations. First, the sample sizes were admittedly small (see Footnote 4). Though undergraduate students were relatively plentiful, graduate student participants were somewhat

more difficult to recruit. Nonetheless, sufficient numbers of students of both types were located and sample sizes met the planned levels. Union members, however, were extremely difficult to enlist, and the final sample size fell short of the planned 21 groups. Indeed, only after considerable difficulty were 18 groups of participants finally obtained. Brett (1980, p. 208) has pointed out that "getting access to a unionized research site may be the most formidable task for organizational behavior researchers". It is, of course, just this problem which has led to the proliferation of student-based research.

One effect of decreased sample size should be to decrease the probability of finding any differences in behavior. Since differences in behavior were found, the remaining question concerns the reliability of these differences. Further research will be necessary to settle this issue.

The difficulty in recruiting union members for the research also caused another flaw in the study. While the experimenter had a high degree of control over the setting in which students carried out their negotiations, relatively little control could be exerted over the environment in which the union members bargained. As a result, student bargaining groups received their instructions in groups of no more than about 30 and operated in quiet, private rooms. Union members, however, received their instructions in one large group of approximately 100. Furthermore, all 18 groups of union members bargained simultaneously in a large auditorium. A considerable amount of confusion occurred during the instruction period, but the noise and

confusion quickly subsided as soon as the negotiations began. It is, of course, impossible to determine what effect these discrepant conditions may have had on the process and outcomes of the negotiations. Logically, however, the confusion and lack of privacy should have led to less perceived realism, less serious bargaining, and less attention to the task. None of these possible outcomes actually occurred. Nonetheless, a better approach for future research might be to collect data on union members first, then design the student bargainers' environment to match that in which the union members negotiated.

Finally, this study was open to many of the subtle effects to which all laboratory research is vulnerable. For example, the experimenter's effect on the subjects is unknown in terms of both its direction and its magnitude. Furthermore, since the data collection stretched out over several months, the experimenter could have exhibited practice and fatigue effects. Such effects could have been systematically related to the outcomes of the research, since data in some of the experimental conditions were collected sequentially rather than concurrently. On the other hand, some of the issues which commonly plague laboratory research were precisely the topic of interest in this study. For example, differences in the way subjects respond to a laboratory task, differences in the subjects' response to being observed, and differences in age and experience which subjects bring to the laboratory were important experimental variables in this study. As such, they could not produce "artifacts" since such artifacts were, in this case, "experimental effects."

In conclusion, the results of this investigation of the effects of subject type on the outcomes of research on bargaining are by no means decisive. Serious doubts as to the interchangeability of students and "real people" are raised, however. These doubts should be thoroughly explored in further research before a potentially meaningless "science of the bargaining behavior of the college sophomore" is allowed to develop.

II. SIMPLE VERSUS COMPLEX BARGAINING SIMULATIONS AS RESEARCH TOOLS

Low, moderate, and high complexity bargaining simulations were found to elicit variations in bargaining behaviors and outcomes among undergraduate negotiators. To begin, differences in bargaining outcomes were not reflected in overall wage/benefit provisions. Nevertheless, settlements for individual contract items differed across complexity levels. In general, low complexity bargainers tended to accept relatively low wages and high COLA's. High complexity bargainers negotiated moderate COLA's and moderate wages. Finally, moderate complexity bargainers negotiated relatively high wages and settled for low COLA's. Thus, the differences in bargaining outcomes associated with variations in simulation complexity are not simply constant quantitative differences, but reflect qualitatively different views of the importance of various contract provisions. These qualitative differences may reflect different perceptions of the task itself and different personal goals with regard to the bargaining among participants in the three complexity conditions.

Significant differences in bargaining time were also found. Surprisingly, moderate complexity bargainers spent the most time in negotiations. More predictably, low complexity bargainers carried on the shortest contract talks. While the amount and type of information available to the moderate and high complexity bargainers may explain their "reversal" in amount of bargaining time, it is clear that the difference among complexity conditions is not the simple matter one might expect at first glance.

One area in which no significant differences were found is that of bargaining strategy. Since strategies were set very early in the simulation, it may be that the effects of increased complexity were simply not present until after the strategy-planning session. Another possible explanation is that the strategy chosen by a participant is determined by personal values which are not readily influenced by short-term manipulations. In any case, it appears that the complexity manipulations used in this study were not sufficient to produce bargaining strategy differences comparable to those found in the comparison of subject types.

While no differences were found in bargaining strategy, subjects were found to differ across complexity conditions in their approaches to the task. Moderate and high complexity negotiators reported higher effort levels than low complexity negotiators. Similarly, low complexity bargainers reported a less serious approach to negotiations than moderate and high complexity bargainers. Such differences are, of course, in line with differences in bargaining times and observed differences in bargaining behavior. While low

complexity bargainers were heard to engage in social discussion during the negotiations, no such discussions were known to take place during moderate and high complexity negotiations.

Since the purpose of increasing simulation complexity was to induce more realistic bargaining behavior, perceived realism of the simulation was a key measure. As expected, low complexity negotiators reportedly viewed the bargaining simulation as significantly less realistic than moderate and high complexity negotiators. Furthermore, perceived realism was found to be significantly correlated with a "locus of control" measure, i.e., skill versus chance as the determinant of performance. In other words, those who saw the task as realistic also tended to see task performance as skill-determined ($r=0.49$, $p < 0.001$). In addition, perceived realism and self-reported effort were found to be significantly correlated ($r=0.46$, $p < 0.0002$). Finally, perceived realism was significantly related to bargaining time ($r=0.24$, $p < 0.066$). In short, it appears that differences in bargaining complexity do affect perceptions of realism, which are, in turn, related to a variety of other perceptual and behavioral variables.

Manipulation checks indicated that the division of labor manipulation was ineffective. In light of the differences in both the bargaining process and outcomes, it appears that division of labor may not be a critical variable with regard to the simulation of realistic bargaining conditions. Alternatively, it may be that several different configurations of realistic variables could be employed to produce serious bargaining. Perceived realism appears to be a key

variable. However, there may be a number of different ways to induce perceptions of realism. Some approaches may require division of labor while others do not. In any case, the failure of the division of labor manipulation in this study does not appear to have prevented subjects from viewing the simulation as realistic.

Again, many subtle effects may have influenced the outcome of this study. Experimenter bias, practice and fatigue effects, differences due to the time of data collection, and other such factors may have contaminated the results. For example, the low complexity bargaining data were collected early in the Spring Quarter of the academic year, a time when undergraduate students are notoriously restless. Some of the same arguments presented as justification for this study, then, may be levelled as criticisms of it. It should be kept in mind, however, that at least one of the outcomes of the study which should be highly vulnerable to experimenter bias actually contradicted the experimenter's expectations (i.e., the moderate complexity negotiators spent more time bargaining than did the high complexity negotiators). Furthermore, many of the observed differences among complexity conditions were quite complex themselves. For example, the differences in contract provisions could not have been predicted on any logical or theoretical basis. Any direct experimenter influence over such outcomes appears unlikely. While it is impossible to rule out the chance that the results of this study were simple "artifacts", the study revealed differences in perceptual, behavioral, and outcome variables which deserve further attention. This investigation was intended to determine whether simulation

complexity merits the attention of experimenters interested in improving the generalizability of laboratory-based research findings. While no conclusive statements may be made about the effects of varying simulation complexity, the present study indicates that this should be a fruitful area for future investigation.

III. RECOMMENDATIONS

As was pointed out earlier, only tentative conclusions may be drawn from the studies reported here. Therefore, the primary recommendation to emerge from these investigations is that the issues of subject-type and simulation complexity should be explored further.

Investigators who pursue similar research in the future might do well to avoid some of the problems which arose in the present studies. One such problem concerns the scarcity of union members available and willing to participate in research. In the case of the present studies, the scarcity of union member participants prevented the use of a completely crossed design, subjects by complexity, which would have permitted examination of the interaction term. In addition, this scarcity led to the necessity of collecting union member bargaining data under less controlled conditions than had been possible with student subjects. It is, of course, impossible to determine what effect, if any, this relative lack of control may have had on the research results. However, in the future it would seem wise to collect union member data before beginning student data collection. Since a high degree of control is possible with students, the experimenter could then design the student data collection process

to match that which was used with the less controllable union member sample. While this would not guarantee that the data would be collected under ideal conditions, it would at least ensure comparable data collection conditions for all subjects. If the investigator can get firm commitments from union officials prior to commencing data collection, of course, there may be no need for concern about relative lack of control over union member bargaining.

Another problem encountered in this study concerned the use of written instructions and case materials with union member subjects. Some of the union members appeared to have difficulty with written materials. As a result, considerable oral instruction was required in order to make sure that all subjects understood the task. If possible, it would be highly desirable to administer the instructions and explain the bargaining materials orally to small groups of subjects. Ultimately, this approach would probably save time as well as maximizing comprehension. Unfortunately, in the present study it was necessary to administer instructions to union members in a large group due to limited time and facilities.

During the data collection process, negotiations were monitored in a relatively informal, unsystematic manner. This informal monitoring revealed that undergraduates in low complexity simulations often lost sight of the task and discussed a variety of other topics. Subjects in other bargaining conditions were not observed to stray from the assigned topic of conversation. Since such differences in behavior are central to the experimental hypotheses, the importance of monitoring the bargaining should be obvious. The informal

monitoring used in this study had the advantage of being relatively unobtrusive. Indeed, more formal "eavesdropping" may have prevented subjects from wandering off the assigned task. If the investigator wishes to fasten subjects' attention on the task, negotiations should be constantly observed or perhaps electronically monitored (with the subjects' full awareness). If the investigator's goal is to observe natural differences in attention to the task, however, sporadic or covert monitoring of the bargaining would be necessary. In the present study, sporadic monitoring was carried out, and the experimenter often overheard conversations as he approached the bargaining room.

Difficulties with written materials were explained earlier. In addition to the reading problems encountered with some union members, however, written measures also caused other problems. First, some subjects tended to lose interest as they filled out required paper work prior to receiving their bargaining instructions. For the most part, the simulation itself was sufficiently involving to restore subjects' interest. Nonetheless, it is recommended that pre-bargaining paper work be kept to a minimum. Furthermore, many subjects seemed anxious to talk about their negotiations after completing the task, but some were less enthusiastic about filling out written post-measures. It may, therefore, be better to conduct a post-negotiation interview than to have subjects fill out questionnaires. The entire bargaining group (both "union" and "management") could be included in a group interview. If the interview were carefully patterned and skillfully carried out, the

resulting data may be superior to questionnaire data. Such interviews could be combined with the feedback and debriefing process.

Turning to a more specific issue, the measures of bargaining strategies used in this research proved to be very difficult to interpret. The focus on specific strategies made characterization of intergroup differences difficult. It may be more fruitful to define strategies in more general terms so that general tendencies (e.g., toward fairness or self-interest) might be highlighted.

Finally, two additional types of comparisons are suggested for future research. The present investigations compared students with union members, many of whom had had some previous experience with union-management bargaining. It would be equally interesting to compare student bargaining with bargaining carried out by labor relations experts from the ranks of management. As was suggested earlier, students in general and business students in particular may serve as better surrogates for management negotiators than for union officials. While students differ in a great many ways from labor relations managers, many students are more familiar with the goals and values of management than with those of unions. Furthermore, business/management students often find it easier to identify with management than with the labor movement. It may be that business students could serve as acceptable surrogates for management negotiators while some other group might be found to take the role of the union.

A second comparison which should be made would involve the use of a relatively complex simulation in which both students and union

members participated. The present study endeavored to determine whether students and union members would behave comparably in a simple bargaining simulation. It also attempted to determine whether simulation complexity is a significant determinant of bargaining behavior. What it did not tackle is the question of whether complex bargaining simulations can produce realistic bargaining behavior from undergraduate or graduate students. Such a comparison would, of course, require a major commitment of time from a sizeable group of union members, a commitment which would be extremely difficult to obtain.

IV. IMPLICATIONS FOR FUTURE RESEARCH ON UNION-MANAGEMENT RELATIONS

While the results of this investigation are by no means conclusive, it is nonetheless possible to make some tentative recommendations for those who are interested in studying union-management negotiations in the laboratory. First, regardless of what type of subject is employed, it appears to be important that the negotiators perceive the bargaining simulation to be realistic. This does not necessarily mean that the simulation must be highly complex, since union members tended to see even the low complexity simulation as realistic. There may, in fact, be several ways of producing perceived realism. For example, students may perceive a simple simulation as realistic if first given information about union-management relations and labor negotiations. Alternatively, complex simulations may induce perceptions of realism without any accompanying instruction. It may be sufficient in some cases to simply tell the

subjects that the exercise in which they are going to take part is, in fact, very much like bargaining in the "real world." In any case, perceptions of realism appear to be related to the approach subjects take and the effort they exert in the bargaining process.

Secondly, researchers should attempt to design simulations which reward serious bargaining rather than quick settlement. When undergraduate students bargained in a low complexity simulation, they took their task less seriously, exerted a relatively low level of effort, and, perhaps most significantly, spent relatively little time in negotiations. Increased complexity is one way to build a meaningful reward structure into the bargaining simulation, as evidenced by the higher levels of seriousness, effort, and bargaining time found in the moderate and high complexity conditions. There may be other, equally effective, methods of producing motivation to approach the bargaining aggressively. It seems unlikely, however, that research results can be meaningful if a quick exit from the laboratory is the most rewarding outcome available in the simulation. Effective bargaining should be rewarded in some fashion. Some possibilities include monetary rewards or academic credit made contingent upon bargaining outcomes, appeals to the individual's "competitive spirit", or stimulation of the subjects' desire to learn. Since individuals differ in their preference for different types of rewards, a combination of incentives might be best.

Finally, and most importantly, investigators need to seriously consider the characteristics of their subjects in comparison with those of their target population. Similarly, the nature of the

experimental task should be contrasted with the "real world" when interpreting research results. Such considerations should minimize the possibility of over-interpretation or over-generalization of laboratory findings. In order to make such comparisons, however, the researcher must make a concerted effort to become familiar with the "real world." Only when investigators are knowledgeable about the object of their research efforts are those efforts likely to pay off.

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APPENDIXES

APPENDIX A

TABLE 1
COMPARISONS OF STUDENTS AND "REAL PEOPLE" AS EXPERIMENTAL SUBJECTS

Citation	Subjects	Type of Behavior	Results	Comments
Allen & Ruhe (1976)	46 students 288 naval squad leaders	Leader behavior in knot tying and ship routing tasks	Using the Baltes IPA, real people emitted significantly more positive social-emotional and directive comments to themselves; real people emitted significantly more directive comments to the group; real people emitted more negative social-emotional comments to individuals; many similar behaviors for students and real people.	Felt that similarity of results provides evidence of generalizability of lab studies using students; differences observed attri- buted to real people's greater experience in leadership roles, greater familiarity with subordinates, and greater sense of experi- mental realism.
Albert (1967)	115 students 74 managers 67 non-managers 45 military personnel	Resolution of a business conflict situation	Advocacy produced significant change in initial position for students and managers; significant change for non- managers and military personnel only if the "approval" position was advocated.	Subgrouping created small cell frequencies; some questionable statistical analysis; authors concluded that they are dubious of practice of using non-businessmen as subjects in business-related research.
Dipboye, Fromkin & Wiback (1975)	30 STS 30 professional interviewers	Recruiting interview	Both groups ratings of applicants affected by scholastic standing, sex, and attractiveness; students more lenient.	Neither group had information about the job to be filled beyond a "somewhat ambiguous job description" (p. 40).
Fleming (1963)	6 STS 6 professors 14 middle managers	Decision-making for an in-basket exercise	Students and professors emphasized the development of secondary criteria dealing with cost; real people con- cerned about reliability of the carrier and control of shipments; cost not a major consideration for real people.	Small N's; students and professors combined as an academic sample; author casts doubt on the validity of using students in business decision-making research.

TABLE 1 (Continued)

Citation	Subjects	Type of Behavior	Results	Comments
Hakel, Dorneyer, & Dunnette (1970)	20 students 22 college recruiters for accounting firms	Selection interview	Main effects for three content domains was significant in both groups; real people placed greater weight on applicant's scholastic standing; students placed greater weight on applicant's business experience; students more lenient.	Small N's; "evaluations also depend on who is making the evaluation, an interviewer or a student" (p. 69).
Hakel, Holiman, & Dunnette (1970)	20 students 37 CPA interviewers 14 industrial interviewers	Selection interview	Interests of accountants identified with equal accuracy in all three groups; CPA's perception differed from those of students and industrial interviewers with respect to accountant interests.	Small N's; "The type of applicant selected for accounting positions will depend on who does the interviewing. A CPA will be more likely to select a "tiger", while the personnel manager (and students) will be more apt to select the members of a flock (p. 119).
Hakel, Ohnesooye, & Dunnette (1970)	102 students 87 employment interviewers	Selection interview	For both groups, contrast effects had little effect whereas applicant qualifications had a large effect; students more lenient.	
Kavanagh (1975)	111 students 39 managers	Description of ideal supervisor as measured by the LBDQ.	Students prefer freedom and self-actualization opportunities; real people advocated initiating structure.	Author concludes that being employed affected the preferences for "ideal" leadership.
Lardy & Bates (1973)	40 students 90 professional recruiters	Recruiting interview	Assimilation and contrast effects absent in both groups; level of target resume affected ratings in both groups; 50% of real people spontaneously observed that hiring not based on resume inspection whereas students had no reservations about this criterion.	Authors dubious of the suitability of students as a subject population.

TABLE 1 (Continued)

Citation	Subjects	Type of Behavior	Results	Comments
Miner (1976)	110 students 101 personnel and industrial relations employees	Convergence among 3 measures associ- ated with leader- ship in large organizations	Miner Sentence Completion Scale (MSCS) related to F-scale and Ghiselli SDI for students; MSC's related to SDI but unrelated to F scale for real people.	"Analyses of the individual F-scale items which produced the relationship among the (students) suggested that early family-related experiences and attitudes may contribute to the development of motivation to manage, but lose their relevance for it later, under the onslaught of actual managerial experience" (p. 383).
Moskowitz (1971)	53 Students 30 R & D managers	R & D management decision Game	Students displayed inability to discriminate among alternative actions; real people were more consistent, more rational, superior information processors, and more risk inclined.	Severe attrition in real people sample; authors conclude that students not acceptable surrogates for real people in business- related decision-making research.
Rosen & Jerdee (1973)	158 Students 98 banking supervisors	Judging the effectiveness and appropriateness of "supervisory styles"	In both groups, the evaluations of the efficiency of certain supervisory styles are influenced by the sex of the super- visor and subordinates.	Authors concluded that sex-role stereotypes are pervasive in our culture.
South (1974)	45 Students 77 businessmen and managers	Evaluation of Need for Achievement	Students had lowest Need for Achievement scores; students less persistent, had lower task tension, less seeking of recognition.	Low questionnaire return rate; study con- ducted in the Netherlands; author concludes that real people differed significantly from students in Need for Achievement.
Williams, Morea, & Ives (1975)	34 Students 17 managers	Evaluation of six social roles and ideal job	Q-sort of ideal job similar in both groups; students ranked religion and social positions highest; real people family role first.	Small N's; cultural stereotypes rather than individual preferences may be reflected in the data; authors are cautious in their interpretations of results.

TABLE 2
CRITERIA FOR LITERATURE REVIEW

I. Subject-Related Issues

A. Type of Subjects

1. "Real people" sampled from relevant settings
2. "Real people" sampled from irrelevant settings
3. Individuals sampled from highly selected irrelevant groups (e.g., students)

B. Type of Groups

1. Ad hoc groups (i.e., gatherings)
2. "Real" groups; formed for research purposes
3. "Real" groups; naturally occurring (i.e., existing groups)

II. Task-Related Issues

A. General Organizational Issues

1. Task independence-interdependence
2. Ambiguity-clarity of feedback
3. Number of evaluative criteria (performance measures)
4. Presence-absence of division of labor (role differentiation)

B. Issues Specific to Union-Management Relations

1. Expectation of future interaction
 2. Incorporation of "real-world" constraints
 3. Accompaniment of representation with accountability
-
-

TABLE 3

CHARACTERISTICS OF PSYCHOLOGICAL STUDIES DEALING WITH UNION-MANAGEMENT RELATIONS

Authors	Type of Subjects	Type of Groups	Inter-Dependence	Feedback	Performance Measures	Role Differentiation	Expectation of Future Interaction	Real World Constraints	Accountability
Falke, Hammond, & Meyer (1973)	Actual Union & Management Negotiators	Real (Existing)	Not Applicable	Manipulated (Independent Variable)	Multiple Measures	Yes	Yes	Yes	Yes
Bateman (1980)	Undergraduates	None (Programmed Offers)	None	Direct	Multiple Measures	No	No	Yes	No
Brookmire & Sistrunk (1980)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	Manipulated (Independent Variable)	No
DeHisi & Dworkin (1981)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	Yes	No
Druckman (1967)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	No	Yes
Druckman (1968)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	No	Yes

TABLE 3 (Continued)

Authors	Type of Subjects	Type of Groups	Inter-Dependence	Feedback	Performance Measures	Role Differentiation	Expectation of Future Interaction	Real-World Constraints	Accountability
Johnson & Pruitt (1972)	Graduate Students	Ad Hoc Dyads	S's Performance Judged Against That of Other S's	Direct	Single Measure (Concessions)	No	No	No	Yes
Kelley, et al. (1970)	Undergraduates & Volunteers From Population at Large	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	No	No
Klimoski (1972)	Undergraduates	Ad Hoc	None	Direct	Multiple Measures	No	No	No	Manipulated (Independent Variables)
Klimoski & Ash	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	No	Manipulated (Independent Variables)
Maier & Sashkin (1971)	Undergraduates	Ad Hoc 4 & 5 Person Groups	None	Direct	Multiple Measures	Yes	No	No	Not Applicable
Morley & Stephenson (1969)	Unknown (Not Stated)	Ad Hoc Dyads	None	Direct	Single Measure (Bargaining Outcome)	No	No	No	No

TABLE 3 (Continued)

Authors	Type of Subjects	Type of Groups	Inter-Dependence	Feedback	Performance Measures	Role Differentiation	Expectation of Future Interaction	Real-World Constraints	Accountability
Notz & Starke (1978)	Undergraduates	Ad Hoc - 4 Person Groups	None	Direct	Multiple Measures	No	No	No	Yes
Rabbie & Visser (1972)	Undergraduates	Ad Hoc - 3 Person Groups	None	Direct	Multiple Measures	No	No	No	No
Shapiro & Bass (1975)	Managers	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	No	No
Slusher (1978)	Undergraduates	Ad Hoc "Nominal" 4 Person Groups	None	Direct	Multiple Measures	Yes (Simulated)	No	Yes	Yes
Stern, Sternthal & Craig (1975)	Undergraduates & Graduate Students	Real (Created) for the Research	Group Performance Judged Against That of Other Measures Groups	Ambiguous (Complex Performance)	Multiple Measures	Yes	No	Yes	Yes
Fjesvold (1971)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	Yes (Simulated)	No	Yes	Yes
Vidmar (1971)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	No	No

TABLE 3 (Continued)

Authors	Type of Subjects	Type of Groups	Inter-Dependence	Feedback	Performance Measures	Role Differentiation	Expectation of Future Interaction	Real-World Constraints	Accountability
Wall, (1975)	Undergraduates	Ad Hoc - 4 Person Groups	None	Direct	Multiple Measures	Yes	No	No	Yes
Wall, (1979)	Undergraduates	Ad Hoc Dyads	None	Direct	Multiple Measures	No	No	Yes	No
Wall, Study #1 (1981)	Undergraduates	None (Programmed Offers)	None	Direct	Single Measure (Size of Concession)	No	No	Yes	No
Wall, Study #2 (1981)	Undergraduates	Ad Hoc	None	Direct	Multiple Measures	Yes	No	Yes	Yes
Wall, Study #3 (1981)	Undergraduates	None (Programmed Offers)	None	Direct	Multiple Measures	Yes	No	No	Yes (Simulated)
Yukl (1972)	Undergraduates	None (Programmed Offers)	S's Performance Judged Against That of Other S's	Ambiguous	Single Measure (Concessions)	No	No	No	No

TABLE 4

SUMMARY OF THE CHARACTERISTICS OF PSYCHOLOGICAL LITERATURE
DEALING WITH UNION-MANAGEMENT RELATIONS
(BY NUMBER OF STUDIES)

<u>Subjects:</u>	Managers -	1
	Managers & Union Members -	1
	Students -	22
	Unknown (Not Stated) -	1
<u>Interdependence:</u>	Based on Relative Performance -	3
	None -	21
	Not Applicable -	1
<u>Feedback:</u>	Ambiguous (Realistic) -	2
	Manipulated (Independent Variable) -	1
	Direct -	22
<u>Role Differentiation:</u>	Yes -	8
	No -	17
<u>Real World Constraints:</u>	Yes -	9
	No -	15
	Manipulated (Independent Variable) -	1
<u>Expectation of Future Interaction:</u>	Yes -	1
	No -	24
<u>Groups:</u>	Real -	2
	Ad Hoc -	18
	None (Programmed Offers) -	5
<u>Accountability:</u>	Yes -	11
	No -	11
	Not Applicable -	1
	Manipulated (Independent Variable) -	2
<u>Performance Measures:</u>	Single -	4
	Multiple -	21

TABLE 5
MEAN "REALISM SCORE" BY COMPLEXITY CONDITION

Low Complexity	-	2.55
Moderate Complexity	-	2.77
High Complexity	-	2.99

TABLE 6

"DIVISION OF LABOR": FREQUENCY BY COMPLEXITY CONDITION

Response Category	Low Complexity	Moderate Complexity	High Complexity
1) Both team members did equal amounts of analysis and bargaining.	54	41	52
2) One team member did all or most of the analysis while the other member did all or most of the bargaining.	9	24	14
3) One team member did nearly all of the work while the other team member contributed little or nothing.	5	6	2
4) The work was divided between team members in some other way.	16	5	10

TABLE 7
DEMOGRAPHIC DATA BY COMPLEXITY CONDITION

	Low Complexity n = 84	Moderate Complexity n = 84	High Complexity n = 80
<u>Age</u>	Mean = 21.33 Yrs Range = 19-41 Yrs	Mean = 21.03 Yrs Range = 19-29 Yrs	Mean = 20.62 Yrs Range = 19-28 Yrs
<u>Sex:</u> Male	50	50	55
Female	34	32	25
Missing	0	2	0
<u>Marital Status:</u>			
Single	75	71	73
Married	8	10	7
Divorced	1	1	0
Missing	0	2	0
<u>Education Level:</u>			
Missing	0	0	0
1 Grade School	0	0	0
2 Some High School	0	0	0
3 High School Grad	0	0	0
4 Some Business or Technical	0	0	0
5 Some College	84	84	80
6 Business College or Tech Degree	0	1	0
7 College Degree	0	0	0
8 Some Grad Work	0	0	0
9 Graduate Degree	0	0	0

TABLE 7 (Continued)

	Low Complexity n = 84	Moderate Complexity n = 84	High Complexity n = 80
<u>Educational Status:</u>			
Missing	1	3	2
Part-Time U.G.	2	0	1
Full-Time U.G.	81	81	77
Part-Time Grad	0	0	0
Full-Time Grad	0	0	0
None of Above	0	0	0
<u>Employment Status:</u>			
Missing	0	4	0
Emp Full-Time	3	2	6
Emp Part-Time	33	35	35
Not Curr Emp	48	43	39
<u>Source of Support:</u>			
Missing	0	0	0
Parents or Family	62	56	54
Working Spouse	6	6	4
Self-Supported	15	18	19
Other	1	4	3
<u>Ever Held Full-Time Job?</u>			
Missing	0	4	0
Yes	16	30	19
No	68	50	61
<u>Occupation Code:</u>			
Missing	67	54	62
Construction/Skilled Trade	2	2	3
Banking & White Collar	9	2	5
Unskilled	0	5	1
Sales	2	9	3

TABLE 7 (Continued)

	Low Complexity n = 84	Moderate Complexity n = 84	High Complexity n = 80
<u>Occupation Code:</u>			
(Continued)			
Clerical	1	5	1
Technical	1	6	4
Military	1	1	0
Waiter/Service	0	0	1
Teaching	1	0	0
<u>Number of Years of Full-Time Employment:</u>			
Missing	0	0	0
0 (< 1)	72	64	64
1	3	4	7
2-5	8	14	7
6-8	0	2	2
9 or more	1	0	0
<u>Ever Held a Manage- ment Position?</u>			
Missing	0	0	0
Yes	18	12	15
No	66	72	65
<u>Number of Years as a Manager:</u>			
Missing	67	72	66
0 (< 1)	6	5	4
1	5	2	7
2-5	6	5	3
6-8	0	0	0
9 or more	0	0	0

TABLE 7 (Continued)

	Low Complexity n = 84	Moderate Complexity n = 84	High Complexity n = 80
Ever Employed by Management in the Field of Union- Management <u>Relations?</u>			
Missing	0	0	0
Yes	1	0	0
No	83	84	80
Ever Belonged to a Union?			
Missing	0	2	
Yes	5	7	8
No	79	75	72
Ever held <u>Union Office?</u>			
Missing	0	2	0
Yes	1	1	0
No	83	81	80
Ever Participated in Union-Management <u>Bargaining?</u>			
Missing	0	2	0
Yes	0	0	0
No	84	82	80
Ever Participated in <u>Simulated Bargaining?</u>			
Missing	0	0	0
Yes	1	4	0
No	83	80	80

TABLE 7 (Continued)

	Low Complexity n = 84	Moderate Complexity n = 84	High Complexity n = 80
<u>If yes, how many times?</u>			
Missing	0	0	0
0	83	80	80
1	0	4	0
2	0	0	0
3	1	0	0
4	0	0	0
5	0	0	0
<u>How many years ago?</u>			
Missing	84	80	80
0 (< 1)	0	1	0
1	0	1	0
2	0	0	0
3	0	1	0
4	0	1	0
5	0	0	0
<u>Union Office Held:</u>			
None/Missing	84	84	80
1) Steward	0	0	0
2) Local Officer	0	0	0
3) State/Regional Officer	0	0	0
4) Negotiator	0	0	0

TABLE 8
DEMOGRAPHIC DATA BY SUBJECT TYPE

	Undergraduates n = 84	Graduate Students n = 84	Union Members n = 72
<u>Age</u>	Mean = 21.33 Yrs Range = 19-41 Yrs	Mean = 29.63 Yrs Range = 22-55 Yrs	Mean = 41.64 Yrs Range = 24-63 Yrs
<u>Sex</u> (Male)	50	49	56
(Female)	34	33	12
(Missing)	0	2	4
<u>Marital Status:</u>			
Single	75	31	5
Married	8	43	55
Divorced	1	8	5
Missing	0	2	7
<u>Education Level:</u>			
Missing	0	2	4
1 Grade School	0	0	4
2 Some High School	0	0	19
3 High School Grad	0	0	27
4 Some Business or Technical	0	0	8
5 Some College	84	0	6
6 Business College or Technical Degree	0	0	2
7 College Degree	0	0	2
8 Some Graduate Work	0	55	0
9 Graduate Degree	0	27	0
<u>Education Status:</u>			
Missing	0	2	4
Part-Time U.G.	2	0	1
Full-Time U.G.	82	0	0
Part-Time Grad	0	31	0
Full-Time Grad	0	51	0
None of Above	0	0	67

TABLE 8 (Continued)

	Undergraduates n = 84	Graduate Students n = 84	Union Members n = 72
<u>Employment Status:</u>			
Missing	0	2	0
Emp. Full-Time	3	31	72
Emp. Part-Time	33	28	0
Not Curr Emp	48	23	0
<u>Source of Support:</u>			
Missing	0	2	0
Parents or Family	62	12	0
Working Spouse	6	17	3
Self-Supported	15	47	69
Other	1	6	0
<u>Ever Held Full-Time Job?</u>			
Missing	0	2	0
Yes	16	69	72
No	68	13	0
<u>Occupation Code:</u>			
Missing	67	15	8
Construction/Skilled Trade	2	0	16
Banking, White Collar	9	16	2
Unskilled	0	1	41
Sales	2	4	0
Clerical	1	4	3
Technical	1	21	2
Military	1	4	0
Waiter/Service	0	0	0
Teaching	1	19	0

TABLE 8 (Continued)

	Undergraduates n = 84	Graduates n = 84	Students Union Members n = 72
Number of Years of <u>Full-Time Employment:</u>			
Missing	0	0	6
0 (< 1)	72	23	0
1	3	8	0
2-5	8	22	5
6-8	0	9	16
9 or more	1	22	45
Ever Held a <u>Management Position?</u>			
Missing	0	2	4
Yes	18	35	1
No	66	47	67
Number of <u>Years as a Manager:</u>			
Missing	7	3	5
0	66	47	67
1 (< 1)	5	10	0
2-5	6	14	0
6-8	0	8	0
9 or more	0	2	0
Ever employed by Management in the Field of Union- <u>Management Relations?</u>			
Missing	0	2	4
Yes	1	1	0
No	83	81	68
Ever Belonged to a Union?			
Missing	0	2	0
Yes	5	13	72
No	79	69	0

TABLE 8 (Continued)

	Undergraduates n = 84	Graduate Students n = 84	Union Members n = 72
Ever Held <u>Union Office?</u>			
Missing	0	2	5
Yes	1	3	62
No	83	79	5
Ever Participated in Union-Management <u>Bargaining?</u>			
Missing	0	2	5
Yes	0	3	36
No	84	79	31
Ever Participated in <u>Simulated Bargaining?</u>			
Missing	0	2	4
Yes	1	7	10
No	83	75	58
If yes, how <u>many times?</u>			
Missing	0	2	4
0	83	74	58
1	0	6	6
2	0	2	2
3	1	0	2
4	0	0	0
5	0	0	0
<u>How Many Years Ago?</u>			
Missing	84	77	64
0	0	2	0
1	0	4	2
2	0	0	4
3	0	0	0
4	0	0	1
5	0	0	1
5 or more	0	1	1

TABLE 8 (Continued)

	Undergraduates n = 84	Graduate Students n = 84	Union Members n = 72
<u>Union Office Held:</u>			
None/Missing	84	82	10
1) Steward		0 (1)	19 (1)
2) Local Officer		0 (2)	42 (2)
3) State/Regional Officer		0 (3)	0 (3)
4) Negotiator		2 (4)	1 (4)

TABLE 9
SEX BY SUBJECT TYPE

Sex	Subject Type		
	Undergraduates	Graduate Students	Union Members
Male	50	49	56
Female	34	33	12

TABLE 10

SEX COMPOSITION OF BARGAINING GROUPS BY SUBJECT TYPE

(Number of Groups)			
Subject Type			
Group Composition	Undergraduates	Graduate Students	Union Members
4 Males	4	2	8
3 Males/1 Female	7	6	3
2 Males/2 Females	5	8	3
1 Male/3 Females	3	2	1
4 Females	2	1	0

TABLE 11

MARITAL STATUS BY SUBJECT TYPE

Marital Status	Subject Type		
	Undergraduates	Graduate Students	Union Members
Not Married	76	39	10
Married	8	43	55

TABLE 12
SOURCE OF SUPPORT BY SUBJECT TYPE

Source of Support	Subject Type		
	Undergraduates	Graduate Students	Union Members
Supported by Parents, Spouse, or Other	69	35	3
Self-Supported	15	47	69

TABLE 13
EMPLOYMENT STATUS BY SUBJECT TYPE

Employment Status	Subject Type		
	Undergraduates	Graduate Students	Union Members
Employed Full-Time	3	31	72
Employed Part-Time	33	28	0
Not Currently Employed	48	23	0

TABLE 14
SEX BY COMPLEXITY LEVEL

Sex	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
Male	50	50	55
Female	34	32	25

TABLE 15
SEX COMPOSITION OF BARGAINING GROUPS BY COMPLEXITY LEVEL

(NUMBER OF GROUPS)

Group Composition	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
4 Males	4	2	1
3 Males/1 Female	7	7	11
2 Males/2 Females	5	7	6
1 Male/3 Females	3	3	0
4 Females	2	0	0

TABLE 16
MARITAL STATUS BY COMPLEXITY LEVEL

Marital Status	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
Not Married	76	72	73
Married	8	10	7

TABLE 17

SOURCE OF SUPPORT BY COMPLEXITY LEVEL

Source of Support	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
Supported by Parents, Spouse, or Other	69	66	61
Self-Supported	15	18	19

TABLE 18
EMPLOYMENT STATUS BY COMPLEXITY LEVEL

Employment Status	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
Employed Full- or Part-Time	36	37	41
Not Ccurrently Employed	48	43	39

TABLE 19
MEAN SETTLEMENT LEVELS BY SUBJECT TYPE

Bargaining Issue:	Undergraduates	Graduate Students	Union Members
Workmen Wage	2.803	2.926	3.050
Repairmen Wage	3.995	4.209	4.263
Hospital and Medical Plan	0.038	0.051	0.057
Workmen COLA	0.206	0.172	0.075
Repairmen COLA	0.301	0.251	0.100
Vacation Plan	0.058	0.073	0.065
Workmen Package	3.104	3.301	3.247
Repairmen Package	4.392	4.585	4.485

TABLE 20

DISCRIMINANT ANALYSIS OF SETTLEMENT LEVELS ACROSS SUBJECT TYPES

<u>Bargaining Issue</u>	<u>Discriminant Loading</u>	<u>Significance Level</u>
Workmen Wage	0.436	p = 0.0028
Repairmen Wage	0.447	p = 0.0021
Hospital & Medical Plan	0.535	p = 0.0002
Workmen COLA	-0.683	p < 0.0001
Repairmen COLA	-0.725	p < 0.0001
Vacation Plan	0.117	p = 0.2441

CANONICAL DISCRIMINANT FUNCTIONS

	<u>Eigen Value</u>	<u>% Variance Explained</u>	<u>Canonical Correlation</u>	<u>Significance Level</u>
First Discriminant Function	0.77630	81.98	0.661	$\chi^2(12) = 28.919$, p = 0.0041
Second Discriminant Function	0.17068	18.02	0.382	$\chi^2(5) = 6.225$, p = 0.2850

TABLE 21

PERCENTAGE OF "UNION" GROUPS SELECTING EACH STRATEGY ITEM
(BY SUBJECT TYPE)

Strategy Item	Subject Type		
	Under Graduates	Graduate Students	Union Members
1) Reach a settlement close to industry A, B, or C	14.29	23.81	37.50
2) Reach a settlement close to the average of all industries	38.10	14.29	25.00
3) Minimize settlement cost to the company (or maximize settlement gain to the union)	9.52	0.00	0.00
4) Settle as quickly as possible - avoid a strike	23.81	14.29	12.50
5) Bargain over each issue in a specified order	47.62	52.38	12.50
6) Bargain over the total wage/benefit cost to the company before dealing with any individual issue	0.00	9.52	0.00
7) Trade off one issue against another	19.05	23.81	0.00

TABLE 21 (Continued)

Strategy Item	Subject Type		
	Under Graduates	Graduate Students	Union Members
8) Start with the most important issue in order to "get it out of the way"	19.05	9.52	0.00
9) Start with the least important issues in order to "settle the easy issues quickly" and move on to the difficult items	19.05	14.29	25.00
10) Start by trying to determine your opponent's resistance points before making any concessions	0.00	0.00	25.00

Total Number of Groups
Reporting Strategies:

21

21

8

TABLE 22

PERCENTAGE OF "MANAGEMENT" GROUPS SELECTING EACH STRATEGY ITEM
(BY SUBJECT TYPE)

Strategy Item	Subject Type		
	Under Graduates	Graduate Students	Union Members
1) Reach a settlement close to industry A, B, or C	4.76	9.52	25.00
2) Reach a settlement close to the average of all industries	28.57	42.86	18.75
3) Minimize settlement cost to the company (or maximize settlement gain to the union)	14.29	28.57	6.25
4) Settle as quickly as possible - avoid a strike	33.33	19.05	18.75
5) Bargain over each issue in a specified order	23.81	23.81	6.25
6) Bargain over the total wage/benefit cost to the company before dealing with any individual issue	9.52	19.05	0.00
7) Trade off one issue against another	19.05	28.57	0.00

TABLE 22 (Continued)

Strategy Item	Subject Type		
	Under Graduates	Graduate Students	Union Members
8) Start with the most important issue in order to "get it out of the way"	9.05	4.76	0.00
9) Start with the least important issues in order to "settle the easy issues quickly" and move on to the difficult items	28.57	0.00	12.50
10) Start by trying to determine your opponent's resistance points before making any concessions	14.29	23.81	25.00

Total Number of Groups
Reporting Strategies:

21

21

16

TABLE 23

MEAN "UNION" TARGET AND RESISTANCE POINTS BY SUBJECT TYPE
(IN DOLLARS-PER-HOUR EQUIVALENTS)

Bargaining Issue:	Target Points			Resistance Points		
	Under Grads	Grad Students	Union Members	Under Grads	Grad Students	Union Members
Workmen Wage	3.313	3.406	3.479	2.794	2.827	1.962
Repairmen Wage	4.628	4.886	4.786	3.979	4.174	2.730
Hospital & Medical Plan	0.065	0.081	0.072	0.035	0.038	0.033
Workmen COLA	0.314	0.303	0.410	0.170	0.175	0.033
Repairmen COLA	0.445	0.439	0.431	0.247	0.254	0.046
Vacation Plan	0.092	0.096	0.104	0.049	0.059	0.058

TABLE 24

MEAN "MANAGEMENT" TARGET AND RESISTANCE POINTS BY SUBJECT TYPE
(IN DOLLARS-PER-HOUR EQUIVALENTS)

Bargaining Issue:	Target Points			Resistance Points		
	Under Grads	Grad Students	Union Members	Under Grads	Grad Students	Union Members
Workmen Wage	2.631	2.586	2.325	2.943	2.926	2.362
Repairmen Wage	3.751	3.868	3.367	4.209	4.256	3.357
Hospital & Medical Plan	0.019	0.020	0.007	0.046	0.044	0.027
Workmen COLA	0.129	0.061	0.005	0.175	0.157	0.012
Repairmen COLA	0.175	0.089	0.007	0.244	0.229	0.017
Vacation Plan	0.027	0.043	0.023	0.072	0.070	0.046

TABLE 25
MEAN SETTLEMENT LEVELS BY COMPLEXITY CONDITION

Bargaining Issue:	Low Complexity	Moderate Complexity	High Complexity
Workmen Wage	2.803	2.962	2.832
Repairmen Wage	3.995	4.214	4.036
Hospital and Medical Plan	0.038	0.043	0.044
Workmen COLA	0.206	0.137	0.160
Repairmen COLA	0.301	0.195	0.231
Vacation Plan	0.058	0.060	0.052
Workmen Package	3.104	3.201	3.088
Repairmen Package	4.392	4.512	4.363

TABLE 26

DISCRIMINANT ANALYSIS OF SETTLEMENT LEVELS ACROSS COMPLEXITY LEVELS

<u>Bargaining Issue</u>	<u>Discriminant Loading</u>	<u>Significance Level</u>
Workmen Wage	0.659	$p < 0.0001$
Repairmen Wage	0.800	$p < 0.0001$
Hospital & Medical Plan	0.178	$p = 0.1742$
Workmen COLA	-0.544	$p < 0.0001$
Repairmen COLA	-0.571	$p < 0.0001$
Vacation Plan	0.137	$p = 0.2962$

CANONICAL DISCRIMINANT FUNCTIONS

	<u>Eigen Value</u>	<u>% Variance Explained</u>	<u>Canonical Correlation</u>	<u>Significance Level</u>
First Discriminant Function	0.35868	84.60	0.514	$\chi^2(12) = 20.152,$ $p = 0.0643$
Second Discriminant Function	0.06529	15.40	0.248	$\chi^2(5) = 3.447,$ $p = 0.6314$

TABLE 27

PERCENTAGE OF "UNION" GROUPS SELECTING EACH STRATEGY ITEM
(BY COMPLEXITY LEVEL)

Strategy Item	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
1) Reach a settlement close to industry A, B, or C	14.29	4.76	5.00
2) Reach a settlement close to the average of all industries	38.10	38.10	30.00
3) Minimize settlement cost to the company (or maximize settlement gain to the union)	9.52	14.29	20.00
4) Settle as quickly as possible - avoid a strike	23.81	61.90	55.00
5) Bargain over each issue in a specified order	47.62	47.62	60.00
6) Bargain over the total wage/benefit cost to the company before dealing with any individual issue	0.00	9.52	10.00
7) Trade off one issue against another	19.05	00.00	30.00

TABLE 27 (Continued)

Strategy Item	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
8) Start with the most important issue in order to "get it out of the way"	19.05	14.29	15.00
9) Start with the least important issues in order to "settle the easy issues quickly" and move on to the difficult items	19.05	14.29	0.00
10) Start by trying to determine your opponent's resistance points before making any concessions	0.00	14.29	10.00
Total Number of Groups Reporting Strategies:	21	21	20

TABLE 28

PERCENTAGE OF "MANAGEMENT" GROUPS SELECTING EACH STRATEGY ITEM
(BY COMPLEXITY LEVEL)

Strategy Item	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
1) Reach a settlement close to industry A, B, or C	4.76	9.52	10.00
2) Reach a settlement close to the average of all industries	28.57	38.10	25.00
3) Minimize settlement cost to the company (or maximize settlement gain to the union)	14.29	28.57	25.00
4) Settle as quickly as possible - avoid a strike	33.33	33.33	45.00
5) Bargain over each issue in a specified order	23.81	23.81	45.00
6) Bargain over the total wage/benefit cost to the company before dealing with any individual issue	9.52	14.29	15.00
7) Trade off one issue against another	19.05	9.52	30.00

TABLE 28 (Continued)

Strategy Item	Complexity Level		
	Low Complexity	Moderate Complexity	High Complexity
8) Start with the most important issue in order to "get it out of the way"	9.52	9.52	20.00
9) Start with the least important issues in order to "settle the easy issues quickly" and move on to the difficult items	28.57	9.52	10.00
10) Start by trying to determine your opponent's resistance points before making any concessions	14.29	9.52	5.00
Total Number of Groups Reporting Strategies:	21	21	20

TABLE 29

MEAN "UNION" TARGET AND RESISTANCE POINTS BY COMPLEXITY LEVEL
(IN DOLLARS-PER-HOUR EQUIVALENTS)

Bargaining Issue	Target Points			Resistance Points		
	Complexity Level					
	Low	Moderate	High	Low	Moderate	High
Workmen Wage	3.323	3.300	3.340	2.823	2.899	2.642
Repairmen Wage	4.652	4.686	4.665	4.010	4.155	3.788
Hospital & Medical Plan	0.065	0.071	0.073	0.036	0.040	0.036
Workmen COLA	0.326	0.228	0.263	0.188	0.150	0.150
Repairmen COLA	0.464	0.326	0.383	0.274	0.204	0.218
Vacation Plan	0.092	0.095	0.093	0.051	0.059	0.041

TABLE 30

MEAN "MANAGEMENT" TARGET AND RESISTANCE POINTS BY COMPLEXITY LEVEL
(IN DOLLARS-PER-HOUR EQUIVALENTS)

Bargaining Issue	Target Points			Resistance Points		
	Complexity Level					
	Low	Moderate	High	Low	Moderate	High
Workmen Wage	2.630	2.605	2.507	2.935	2.928	2.892
Repairmen Wage	3.760	3.817	3.667	4.211	4.233	4.090
Hospital & Medical Plan	0.023	0.020	0.016	0.049	0.046	0.042
Workmen COLA	0.126	0.035	0.049	0.177	0.115	0.123
Repairmen COLA	0.171	0.050	0.065	0.247	0.165	0.173
Vacation Plan	0.027	0.030	0.016	0.070	0.068	0.068

APPENDIX B

FIGURE 1

EXPERIMENTAL DESIGN FOR SUBJECT-TYPE COMPARISONS

Undergraduates	Graduate Students	Union Members
Bargaining Results and Process Measures (Low Complexity Simulation)	Bargaining Results and Process Measures (Low Complexity Simulation)	Bargaining Results and Process Measures (Low Complexity Simulation)

FIGURE 2

EXPERIMENTAL DESIGN FOR COMPLEXITY-LEVEL COMPARISONS

LOW COMPLEXITY SIMULATION	MODERATE COMPLEXITY SIMULATION	HIGH COMPLEXITY SIMULATION
Bargaining Results and Process Measures (Undergraduate Subjects)	Bargaining Results and Process Measures (Undergraduate Subjects)	Bargaining Results and Process Measures (Undergraduate Subjects)

APPENDIX C

BIOGRAPHICAL INFORMATION SHEET

Age _____ Sex (M or F) _____ Martial Status: Single _____
Married _____
Divorced _____

Education (Check One):

- _____ Grade School
- _____ Some High School
- _____ High School Graduate
- _____ Some Business College or Technical School Experience
- _____ Some College Experience (Other Than Business or Technical School)
- _____ Business College or Technical School Degree
- _____ College Degree
- _____ Some Graduate Work
- _____ Graduate Degree

Current Educational Status (Check One):

- _____ Part-Time Undergraduate
- _____ Full-Time Undergraduate
- _____ Part-Time Graduate Student
- _____ Full-Time Graduate Student
- _____ None of the Above

Current Employment Status (Check One):

- _____ Employed Full-Time (Job Title: _____)
- _____ Employed Part-Time (Job Title: _____)
- _____ Number of Hours Worked per Week _____
- _____ None of the Above (Not Currently Employed)

Primary Source of Financial Support (Check One):

- _____ Parents or Family
- _____ Working Spouse
- _____ Self-Supported
- _____ Other

Employment-Related History:

- _____ Have you ever held a full-time job other than summer employment?
If "Yes", in what occupational field(s)? _____

- _____ For what length of time? _____
- _____ Do you now or have you ever held a managerial position? (Yes or No) For what length of time? _____
- _____ Have you ever been employed by management in the field of union-management relations? (Yes or No)
If "Yes", in what capacity? (Give Job Title) _____

- _____ Have you ever belonged to a labor union? (Yes or No)
- _____ If "Yes", have you ever held a union office? (Yes or No)
List Office(s) held (Shop Steward, Local President, etc.) _____

- _____ Have you ever been directly involved in union-management negotiations? (Yes or No)
If "Yes", in what capacity? _____
- _____ Have you ever participated in simulated bargaining before?
If "Yes", when? _____
How many times? _____

INDUSTRIAL RELATIONS ATTITUDE QUESTIONNAIRE

Use the scale below to respond to the following statements:

- 1 - Strongly Agree
- 2 - Agree
- 3 - Undecided
- 4 - Disagree
- 5 - Strongly Disagree

Enter the number of your response in the blank to the left of each statement.

_____ If it were not for unions, we'd have little protection against favoritism on the job.

_____ I think the best man should be kept on the job regardless of seniority.

_____ Unions impose too many restrictions on employers.

_____ Employees feel a sense of participation in their general welfare as a result of collective bargaining.

_____ Charges of "racketeering" in unions are greatly exaggerated.

_____ Employees of a firm have better wages and working conditions when all of them belong to unions.

_____ Unions should have something to say about whom the employer hires.

_____ The labor contract is generally understood and effectively administered by both parties (union and management).

_____ A nonunion shop usually pays lower wages than a union shop.

_____ Union rules often interfere with the efficient running of the employer's business.

_____ Every worker should be expected to join the union where he/she works.

_____ Negotiations are carried out with intelligence, preparation, and a sincere desire to achieve results on the part of both union and management.

_____ We need more laws to limit the power of labor unions.

- _____ Labor unions hold back progress.
- _____ The high wage demands of unions reduce chances for employment.
- _____ Management and labor unions generally recognize that they have certain goals in common.
- _____ The growth of unions has made our democracy stronger.
- _____ The selfishness of employers can be fought only by strong unions.
- _____ Workers should not have to join a union in order to hold a job.
- _____ Labor unions should be regulated to a greater extent by the federal government.
- _____ Every labor union should be required to take out a license from the U.S. government.
- _____ In a factory where there is a union, workers who are not members should be required to pay the regular union fees if they are getting union rates of pay.
- _____ Most unions gain their membership by forcing workers to join by threats of violence.
- _____ If the majority of workers in a plant vote to have a union, the others should be required to join.
- _____ I believe in the institution of collective bargaining.

NEGOTIATION PLAN

Type of Team (Union or Management): _____ Group No.: _____

Bargaining Strategy: _____

Target Points:

Wage Rates:

Workmen: \$ _____ Per Hour

Repairmen: \$ _____ Per Hour

Hospital & Medical Plan: \$ _____ Per Hour

Equivalent

Cost of Living Allowance: \$ _____ Per Hour

Equivalent

Vacation Pay: \$ _____ Per Hour Equivalent

Resistance Points:

Wage Rates:

Workmen: \$ _____ Per Hour

Repairmen: \$ _____ Per Hour

Hospital & Medical Plan: \$ _____ Per Hour

Equivalent

Cost of Living Allowance: \$ _____ Per Hour

Equivalent

Vacation Pay: \$ _____ Per Hour Equivalent

Signatures of Team Members: _____

REQUEST FOR MEDIATION SERVICE

Union Team No.: _____

Management Team No.: _____

Bargaining Period No.: _____

Signatures of Negotiating Teams:

Union:

Management:

TERMS OF AGREEMENT

BETWEEN MANAGEMENT TEAM NO. _____ AND UNION TEAM NO. _____

Signatures:

Wage Rates:

Workmen: \$ _____ Per Hour _____ Company
 _____ Union

Repairmen: \$ _____ Per Hour _____ Company
 _____ Union

Hospital & Medical Plan:

Company Payment: \$ _____ Company
(Equivalent of \$ _____ Per Hour) _____ Union

Cost of Living Allowance:

Negotiated Rate: _____% _____ Company
(Equivalent of \$ _____ Per Hour) _____ Union

Vacation Pay:

Negotiated Rate: _____ Weeks/Year _____ Company
(Equivalent of \$ _____ Per Hour) _____ Union

Total Wage/Benefit Package:

Equivalent of \$_____ Per Hour (Total of individual items)

Note: Failure to complete any part of this contract by the end of the fourth bargaining period will constitute the initiation of a strike. Any issue not signed by both parties will be considered unsettled. In the event of a strike, a contract indicating any issues on which final agreement has been reached should be signed by both parties. In addition, each party must fill out a "Strike Notice" form, indicating the most recent demands or offers made for any unsettled issues.

STRIKE NOTICE

Union No. _____ is on strike against Company No. _____ pending settlement of important issues related to the terms of employment of the members of the Union. Listed below are the final demands or final offers presented by the Union or Company, respectively (include only those issues which have not yet been settled):

Wage Rates:

Workmen: \$ _____ Per Hour
Repairmen: \$ _____ Per Hour

Hospital & Medical Plan:

Company Payment: \$ _____
(Equivalent of \$ _____ Per Hour)

Cost of Living Allowance:

Negotiated Rate: _____%
(Equivalent of \$ _____ Per Hour)

Vacation Pay:

Negotiated Rate: _____ Weeks/Year
(Equivalent of \$ _____ Per Hour)

Submitted by (Check One): _____ Company
 Union

Signatures of Team Members:

POST-NEGOTIATION QUESTIONNAIRE

INSTRUCTIONS: Read the following questions and place the number of your response in the blank to the left of each item.

Use the scale below to respond to questions 1-4:

1-----2-----3-----4-----5
Very Dissatisfied Undecided Satisfied Very
Dissatisfied Satisfied

- _____ 1. How satisfied are you with the outcome of your bargaining?
- _____ 2. How satisfied are you with your own performance in negotiations (regardless of the final outcome)?
- _____ 3. How satisfied are you with the bargaining strategy you planned?
- _____ 4. How satisfied are you with the bargaining performance of your teammate?

Use the scale below to respond to questions 5-8:

1-----2-----3-----4-----5				
To a Very Great Degree	To a Great Degree	To Some Degree	To a Slight Degree	Not At All

- _____ 5. To what degree do you think that your bargaining outcomes were determined by the bargaining skills of your own team and those of your opponents?
- _____ 6. To what degree do you think that your bargaining outcomes were determined by the initial information and description of initial bargaining positions provided to your own team and to your opponents prior to negotiations?
- _____ 7. To what degree do you think that your bargaining outcomes were determined by chance?
- _____ 8. To what degree do you think that your bargaining session was similar to actual union-management negotiations?

Use the scale below to respond to questions 9-11:

1-----	2-----	3-----	4-----	5-----
Not At All	Slightly	Moderately	Very	Extremely
Important	Important	Important	Important	Important

- _____ 9. How important was it to you to obtain a settlement at least as favorable as your target point?
- _____ 10. How important was it to you to obtain a settlement at least as favorable as your resistance point?
- _____ 11. How important was it to you to avoid a strike?

Please respond to questions 12-14 using the scale provided below each item.

- _____ 12. How would you describe the bargaining strategy that your team actually used?
- (1) Followed our original strategy very closely.
 - (2) Slightly modified our original strategy.
 - (3) Greatly modified our original strategy.
 - (4) Abandoned our original strategy, adopted a new strategy.
 - (5) Did not follow any particular strategy.
- _____ 13. How would you describe the way your team divided the tasks of analysis and bargaining between team members?
- (1) Both team members did equal amounts of analysis and bargaining.
 - (2) One team member did all or most of the analysis while the other member did all or most of the bargaining.
 - (3) One team member did nearly all of the work while the other team member contributed little or nothing.
 - (4) The work was divided between team members in some other way.
- _____ 14. How much effort did you, as an individual, devote to the bargaining exercise?

1-----	2-----	3-----	4-----	5-----
Little	A Slight	A Moderate	A Great	As Much As
or None	Amount	Amount	Amount	Possible

15. Read the following possible reasons for trying to negotiate the best possible contract. Rank order the alternatives in terms of their importance to you during the negotiation session you have just completed ("1" indicates your most important reason and "6" indicates the reason you consider least important).

_____ The competitive challenge motivated me.
_____ I wanted to "show up" my bargaining opponents.
_____ I didn't want to let my bargaining teammate down.
_____ I wanted to test or improve my bargaining skill.
_____ I wanted to represent my bargaining unit well.
_____ I didn't want to embarrass myself by performing poorly.

ROLE DESCRIPTION QUESTIONNAIRE

INSTRUCTIONS: The following items ask you to describe your role as a bargaining representative in the bargaining simulation as objectively as you can. Please do not use these items to show how much you liked or disliked your role. Instead, try to make your descriptions as accurate and as objective as possible. The term "role" refers to the "job" you performed in the bargaining simulation.

- _____ 1. To what extent did your role require you to work closely with other people?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Very little; dealing with others is not at all necessary		Moderately; some dealing with others is necessary			Very much; dealing with others is absolutely necessary & crucial	

- _____ 2. How much autonomy was there in your role? That is, to what extent did your role permit you to decide on your own how to go about doing the work?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Very little; my role gave me almost no personal "say" about how and when the work was done		Moderate autonomy; many things were standardized and not under my control, but I could make some decisions about the work			Very much; the role gave me almost complete responsibility for deciding how and when the work was done	

- _____ 3. To what extent did your role involve doing a "whole" and identifiable piece of work? That is, did your role consist of a complete piece of work that had an obvious beginning and end? Or was it only a small part of the overall piece of work which was to be finished by other people?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
My role was only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final outcome		My role was a moderate-sized "chunk" of the overall piece of work; my contribution can be seen in the final outcome			My role involved doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final outcome	

_____ 4. How much variety was there in your role? That is, to what extent did your role require you to do many different things, using a variety of your skills and talents?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Very little; my role required me to do the same things over and over again		Moderate variety		Very much; my role required me to do many different things, using a number of different skills and talents		

_____ 5. In general, how significant or important was your role? That is, were the results of your work likely to significantly affect the lives or well-being of other people?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Not very significant; the outcomes of my work were <u>not</u> likely to have important effects on other people		Moderately significant		Highly significant; the outcomes of my work could affect other people in very important ways		

_____ 6. To what extent did other participants let you know how well you were doing in your role?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Very little; people almost never let me know how well I was doing		Moderately; sometimes people gave me "feedback"; other times they did not		Very much; others provided me with almost constant "feedback" about how well I was doing		

_____ 7. To what extent did the actual performance of your role provide you with information about the level of your performance? That is, did the actual work itself provide clues about how well you were doing--aside from any "feedback" from other participants?

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Very little; the role was set up so I could work forever without finding out how well I was doing		Moderately; sometimes the role provided me with "feedback"; sometimes it did not		Very much, the role was set up so that I got almost constant "feedback" about how well I was doing		

INSTRUCTIONS: Indicate whether each of the following statements is an accurate or an inaccurate description of your role in the bargaining simulation. Please try to be as objective as you can in deciding how accurately each statement describes your role, regardless of whether you liked or disliked your role. Write a number in the blank beside each statement, based on the following scale:

How accurate is the statement in describing your role?

1-----	2-----	3-----	4-----	5-----	6-----	7
Very	Mostly	Slightly	Uncertain	Slightly	Mostly	Very
Inaccurate	Inaccurate	Inaccurate		Accurate	Accurate	Accurate

- _____ 1. The role required me to use a number of complex or high-level skills.
- _____ 2. The role required a lot of cooperative work with other people.
- _____ 3. The role was arranged so that I did not have the chance to do an entire piece of work from beginning to end.
- _____ 4. Just doing the work required by the role provided many chances for me to figure out how well I was doing.
- _____ 5. The role was quite simple and repetitive.
- _____ 6. The role could be fulfilled adequately by a person working alone, without talking or checking with other people.
- _____ 7. The other participants in the bargaining simulation almost never gave me any "feedback" about how well I was doing in my role.
- _____ 8. My role was one where a lot of other people could be affected by how well the work got done.
- _____ 9. The role denied me any chance to use my personal initiative or judgment in carrying out the work.
- _____ 10. The role provided me the chance to completely finish the piece of work I began.
- _____ 11. The role itself provided very few clues about whether or not I was performing well.
- _____ 12. The role gave me considerable opportunity for independence and freedom in how I did the work.
- _____ 13. The role itself was not very significant or important in the broader scheme of things.

VITA

Walter G. Schneider was born in Indianapolis, Indiana on March 24, 1951 to Mr. and Mrs. Jack E. Schneider. He graduated from North Central High School in June, 1969 and entered Butler University the following September. In June, 1973 he was awarded a Bachelor of Arts Degree with Honors in Psychology.

Entering Purdue University in the fall of 1973, he began his graduate work in Industrial/Organizational Psychology. He completed the requirements for the Master of Science Degree in August, 1975 and the degree was officially granted in December of that year.

In September, 1975, he entered the Industrial/Organizational Psychology Program at The University of Tennessee, Knoxville. While working toward his doctorate, he held contracts with Ortec, Incorporated and the Tennessee Valley Authority where he was involved in personnel research. He also served as an instructor in the Department of Management at The University of Tennessee. He received the Doctor of Philosophy Degree in June, 1982.

The author currently is employed as a Psychologist with the Baltimore Gas and Electric Company in Baltimore, Maryland. He and his wife, Angelica Farinelli Schneider, are the proud parents of a daughter, Amy Catherine, born on December 24, 1981.