# AN EVALUATION OF THE CONCEPT OF SUBJECT ROLES; DEVELOPMENT OF THE SUBJECT ROLE MEASURE

DISSERTATION

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

By

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The Ohio State University

1977

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ACKNOWLEDGMENTS

My appreciation is extended to all those individuals who have supported me throughout the completion of this research. In particular, I wish to express my gratitude for the encouragement of my advisor, Dr. Theodore J. Kaul. His enthusiasm, patience, and guidance were a significant contribution to this dissertation as well as an influence on my entire graduate training at the Ohio State University.

I also wish to thank the other members of my reading committee, Drs. Lyle D. Schmidt and Don M. Dell. Their interest and participation in the development of this research was of considerable help, and I appreciate their support and encouragement.

My gratitude is extended to my statistical consultant, Glenn Milligan, for the time and energy he unselfishly spent working with me on the Subject Role Measure. His guidance was very appreciated.

I also wish to acknowledge the work of my experimenters, Laura Hebert, Craig Butler, and Jeffrey Hopkins. They provided me with constructive comments as well as faithful completion of their tasks.

To my true friends, Helen Paul and Deborah Happ, go my thanks for their caring. Throughout this research, they provided both insightful suggestions as well as emotional support.

I want to thank my parents for the constant encouragement they have given me during my education and training.

And my final expression of appreciation is to Michael Altmaier for the patience, support, kindness, and encouragement he supplied every day.

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## PUBLICATIONS

Walsh, W.B., Spokane, A.R., & Mitchell, E.V. Consistent occupational preferences and academic adjustment. Research in Higher Education, 1976, 4, 123-129.

Mitchell, E.V., Kaul, T.J., & Pepinsky, H.B. The limited role of psychology in the roleplaying controversy. Personality and Social Psychology Bulletin, 1977, 3, 514-518.

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# CHAPTER I

## INTRODUCTION

Where do data come from in psychological research? The experimental method dictated that an observer set in motion a sequence of events which yielded data; the data, in turn, upon inspection by the observer, yielded information about the observed events and the relationships between them. Psychological research, then, was the pursuit of objective knowledge (goal) obtained from systematic observation (method) (Neale and Leibert, 1973). The ideal of the classical model was the statement "y = f(x)"; in a psychological experiment, x is the independent variable manipulated by the observer, and y, the dependent variable, the results thereby obtained. This classical model implied the process of experimentation: the detached observer recorded reality as it existed "out there," and did not interject himself into the situation. Also important was the notion that, once the sequence of events started, the observer did not intervene. Therefore, the manipulated independent variable caused the observed events independently of the existence of the observer. For most psychological research, the sequence of events in experiments included participation by subjects, with the data resulting from experiments being produced by the subjects. Results were presumed by the observer to be due to his manipulation of the events, and the effects were utilized to discover

or confirm relationships between events. Individual differences were assumed to be the cause of any "error variance" that was found.

This model of experimentation is now recognized to be somewhat naive. In 1962, Orne focused on the ways in which the subject departed from the classical model of determinism with his discussion of experimental demand characteristics. He asserted that the interaction of "taking part in an experiment" carried with it generally understood roles for both the subject and the experimenter. For the subject, since he has a certain amount of respect for the aims of science and of experimentation, there is a need to have a stake in the outcome, to be able to believe he has made a useful contribution by being a good subject. Orne argued that the subject conceptualizes his role in problem solving terms--to discover and carry out the true purpose of the experiment. The implication of this conceptualization of the subject is that the data produced by the subject are not all directly attributable to the independent variable, but also to the subject's perception of cues to guide his performance during an experiment, or the demand characteristics of the experiment. In addition to criticism of the passive subject role (Orne, 1962, 1970), Rosenthal (1966) argued that a biasing effect may be due to the experimenter. He focused on five specific classes of experimenter variables that could affect subject behavior--biosocial attitudes of the experimenter, his psychosocial attitudes, situational factors, experimenter modeling effects, and experimenter expectancy effects--and concluded that although the manner in which these variables operate during an experiment is unclear, the evidence for their existence is overwhelming.

While the classical model of experimentation was being challenged, an event occurred which gave additional impetus to a reformulation of the psychological experiment. In 1963, Milgram published a report of his investigations of obedience to authority. His experimental method was widely criticized (Baumrind, 1964; Kelman, 1967; Schultz, 1969) on ethical grounds. Baumrind (1964) in particular argued that the stress placed on the deceived subjects was unethical and vitiated any scientific gain achieved by the study. Milgram (1965) replied that indeed the benefits were worth the cost since the supposed harm to the subjects was a subjective judgment on the part of the reader and not a demonstrated occurrence. Similar ethical concerns, however, were raised by Kelman (1967) and Schultz (1969), who argued against the prevalent use of deception. Although deception was designed to minimize experimental artifacts, Schultz (1969) asserted that subjects were aware of the common use of deception. Data achieved through the use of deceived subjects, then, was liable to similar biases and artifacts as those for which deception was used to control, namely demand characteristics and experimenter effects. Milgram's (1963) study, then, focused attention on the possible results of the use of deception, and gave impetus to the development of alternative experimental formulations.

The issue of the effectiveness of deception in controlling possible sources of bias, and its qualifications as an ethical practice, received considerable attention. Arguments favoring the use of deception generally emphasized the methodological precision gained from its use; Aronson and Carlsmith (1968) believed that deception enhanced the

realism of the experimental situation for the subject and encouraged spontaneous responses. Deception also was supported as an ethical practice since it was argued that a thorough debriefing of the subject would vitiate any adverse effects incurred as a result of the deception (American Psychological Association, 1973). Finally, there was research evidence (Sullivan and Deiker, 1973) to indicate that subjects considered deception to be an ethical practice in and of itself.

Arguments in opposition to deception have emphasized what many consider to be the unethical implications of deception. For example, Baumrind (1971, 1975) asserted that the use of deception violates an implicit contract between experimenter and subject, wherein the subject believes the experimenter to be both knowledgeable and trustworthy and thereby extends his cooperation and suspends disbelief. Pragmatically, once a subject has been deceived and informed about it, he is likely to be less cooperative in later research participation (Schultz, 1969). In addition, there is some evidence to indicate that debriefing may fail to remedy the effects of deception (Brock and Becker, 1966; Ross, Lepper and Hubbard, 1976; Walster, Berscheid, Abrahams and Aronson, 1967).

As a result of arguments against deception, several alternative methodological strategies were suggested. Berscheid, Baron, Dermer and Libman (1973) proposed a roleplay sampling technique, in which a pool of potential subjects would be presented relatively complete information concerning an experiment including any deceptions used; their willingness to participate would provide the research with knowledge of how actual uninformed subjects might evaluate the experiment.

Another proposed alternative was some form of roleplaying by the subject. Kelman (1967) was among the first to suggest roleplaying as an alternative, asserting that its use would involve subjects more actively in an experiment. Schultz (1969) believed role-playing subjects would be more trustworthy and responsible experimental participants. The research evidence for roleplaying, however, has not been conclusive. Miller's (1972) review concluded that the prospects for roleplaying were very poor, with shortcomings at both the empirical and theoretical level. Modest support was demonstrated, since then, by investigators comparing role-played data to data achieved by deception (Wahl, 1973; Willis and Willis, 1970). However, the bulk of the evidence (Holmes and Bennett, 1974; Mitchell, 1975; Simons and Piliavin, 1972) indicated roleplaying to be ineffective in achieving results given by deceived subjects. A counter argument was raised by Forward, Canter and Kirsch (1977) who proposed that role-played data be the criterion for validity judgment rather than the reverse; their thesis was that roleplaying encompassed a greater range of responses (e.g., choice, self-representation, intention) and therefore was based on a broader conceptualization of human behavior.

A more important conclusion than that of the efficacy of role-playing versus deception or of the ethical support for deception is apparent from the above cited research. That is, there is additional confirmation that subjects are not reactive to the experiment alone, but that they are also proactive. Subjects participate in an experiment having general motivational proclitivies (e.g., to cooperate, to help, to work against the experimenter). If subjects in an experiment

participate expecting to be deceived, or become aware of experimental contingencies, their behavior is altered from that which is attributable solely to the manipulation of the independent variable. These dispositional variables were viewed within the context of treating the subject as "collaborator" (i.e., involve dispositional variables) or as "object" (i.e., control dispositional variables) when in fact these dispositional variables are legitimate and important independent variables in their own right.

Following Orne (1962), researchers began to discuss subjects' behavior in terms of roles or classifiable motivations (cf. Walker, 1971), but until Weber and Cook (1972) incorporated those suggested into four major types, there was little consistency to the concept. The four roles that Weber and Cook defined were the good subject, the faithful subject, the negativistic subject, and the apprehensive subject. The good subject is presumed to be highly motivated to help validate the experimenter's hypotheses, and thus is alert for cues from the experimenter or other subjects that will tell him how to act. This subject role has also been called the beneficient subject (Levy, 1967) and the cooperative subject (Sigall, Aronson and Van Hoose, 1970). The faithful subject (cf. Fillenbaum, 1966), however, is motivated to give as accurate as possible a representation of his everyday behavior, and will be very careful to avoid acting on the basis of any suspicions he might have. The apprehensive subject role was derived from Rosenberg's (1969) discussion, and describes a subject who is very nervous about how he is being evaluated; because this subject believes psychologists are expert judges of people, he will present himself as

favorably as possible. The final role is the negativistic subject, who is motivated by a desire to work against the experimenter and to disconfirm the experimental hypotheses; his behavior is designed to produce as little useable data as possible (cf. Fillenbaum and Frey, 1970 on the recalcitrant subject; Masling, 1966).

Although the evidence reviewed by Weber and Cook (1971) supported the existence of these subject roles, there are two conceptual problems. First is the question of whether these roles can be assessed reliably. Second, it is not known how these roles affect dependent variables. For example, how will the behavior of a faithful subject differ from that of an apprehensive subject under experimental conditions designed to elicit certain behaviors? It therefore seems necessary to attempt a direct measurement of subjects' dispositions to role adoptions. Such information can increase the knowledge concerning subjects' opinions on research participation. In addition, it may be possible to utilize certain subjects in more collaborative alternatives to deception. Finally, investigating subjects' roles will increase the possibility of better control of research artifacts and biases. The first research goal, then, was to create and test an instrument which would reliably assess subject roles. The second goal was to pilot test the instrument by classifying subjects according to tested role adoption. Differences due to role effects in a controlled experiment could then be specified. It was hoped that the results of this research would both confirm the possibility of direct subject role specification and suggest further validation research.

## CHAPTER II

## REVIEW OF THE LITERATURE

The dispositional role of the subject in psychological experimentation provides the focus in the proposed research. Attention needs to be given to the ethical guidelines for using human subjects and to the deception alternatives which have been proposed to meet these guidelines; it is possible that an examination of dispositional roles may clarify and extend deception alternatives. Secondly, the research on subject effects will be reviewed, so that a broader perspective can be maintained concerning both the subjects' attitudes toward research participation and the effects of these attitudes on experimental results.

### Ethical Guidelines

Principle three of the Ethical Principles in the Conduct of Research with Human Participants (American Psychological Association, 1973) states that:

> "Ethical practice requires the investigator to inform the participants of all features of the research that reasonably might be expected to influence willingness to participate. . . (p. 29)"

Principle four suggests that "openness and honesty" are essential characteristics of the subject-experimenter relationship, and requires the experimenter to insure the subject's understanding of the use of deception. Although these principles do not proscribe

deception, they establish conditions for its use. Part of the controversy surrounding the use of deception (Baumrind, 1975; Kelman, 1967; Kennedy, 1975) centers on whether these conditions for the employment of deception are met. The issue is partially whether the stress and discomfort that can be caused a deceived subject are vitiated by the scientific knowledge gained, and partially whether the subject can be fully restored to the pre-deception state through the use of debriefing.

Baumrind (1971) argued persuasively that deception causes irreperable harm to the subject and to the subject-experimenter relationship because of the breaking of trust. She believed there is an implicit contract between the subject and the experimenter, where the experimenter assumes the subject will cooperate and obey instructions, and the subject assumes the experimenter is both knowledgeable and trustworthy. If the experimenter proves himself untrustworthy by revealing the use of deception, then the social contract is broken. Vinacke (1954) has questioned the use of deception on similar grounds: Is the information gained worth the harm done to the subject's conception of the experimenter-subject relationship?

Wolfensberger (1967) examined the ethical issues of research with human subjects as one expression of a broader concern of human rights and the rights of an individual. He argued that informed consent is the cornerstone of ethical practice with subjects: The subject has the ability freely to consent to serve in an experiment where he knows both what is required of him and the costs inherent in the experimental setting. Baumrind (1971) also argued against the experimenter either delaying or withholding full information from the subject. When the

experimenter's objectives conflict with the honoring of this social contract, Baumrind believed the priority should remain with the subject. Freund (1969) also supported this view. He said of informed consent that it has been "derided as unreal, a cover for the will of the experimenter, and yet it serves purposes that should not be lightly dismissed (p. xii)."

As early as 1954, Berg detailed principles of ethical treatment of subjects. He avowed that an experimenter would avoid breaking the implicit subject-experimenter social contract if the experimenter adhered to the principles of consent, confidence, and standard/acceptable procedures. Consent allows an experimenter to invite participation and avoid coercion while allowing a subject to withdraw gracefully. Confidence covers both public confidence in psychological experimentation, and the confidential nature of any personal information obtained during an experiment. And standard/acceptable procedures would indicate a new procedure being deemed acceptable to the experimenter's colleagues and to potential subjects before being put into use.

There are data to indicate how subjects perceive the use of deception in psychological experiments. Sullivan and Deiker (1973) questioned students and psychologists concerning their willingness to participate in or to administer experiments involving varying degrees of stress, pain, deception, experimentally-prompted unethical behavior, and so on. They found that students were, on the whole, more willing to tolerate such experiments than psychologists were willing to administer them. For example, psychologists were overwhelmingly unwilling

to conduct a study on experimental stress, while students were split about half and half on the issue. Overall, Sullivan and Deiker concluded that psychologists were expressing views more ethically stringent than most of the students, and more conservative in terms of amount of stress they were willing to administer to subjects. Similar findings were noted by Farr and Seaver (1975) who had subjects rate (1) perceived physical discomfort for various experimental procedures, (2) perceived psychological discomfort for various experimental procedures, and (3) perceived invasion of privacy of certain procedures. Their results noted that students did not find as offensive as predicted certain experimental procedures. Although the students were reacting to brief descriptions of the procedures rather than the actual research experience, overall the students indicated less concern with experimental procedures than might have been expected.

Although much of the criticism was directed at the use of deception in social psychology research, similar criticism has been raised by personality theorists and researchers. Adelson (1969) pointed to a crisis in methodology, where personality research's representative study involved (1) an experiment in which (2) an experimenter (3) lies to (4) an undergraduate. He deplored the atmosphere of suspiciousness and the neglect of naturalistic research among personality theorists. Carlson (1971) also criticized methodological practices as incapable of approaching questions of real importance in personality research. In particular, she noted the interpersonal context of the research as involving deception, suspiciousness, and increasing neglect of the subject as a person. And Argyris (1968) noted the unintended

consequences of rigorous research as predictable by organization theory: subjects are either dependent or hostile in an experimenter-subject authoritarian relationship; subjects psychologically or physically withdraw from experiments which are intended as a learning experience for them. In short, subjects will be placed, through the use of rigorous research designs, in conditions similar to those of low-level employees, with similar results.

Schultz (1969) summarized what he saw to be the progression of ethical concerns in experimentation with human subjects. He noted great cause for concern in subjects' attitudes toward research participation, which he described as hostile and suspicious. Historically, the development of the "role" of the subject has progressed from Titchener (1912), who used subjects as fully collaborative trained observers, to today, where subject is object. Schultz argued that subjects do not enter the experiment tabula rosa, but rather with a variety of expectations and attitudes, any one of which can distort their performance. To the subject, the experimenter is a powerful person, being a psychologist and being the recipient of the one-way flow of information. For these reasons, Schultz advocated closer attention to ethical principles of research with human subjects, with particular notice to the use of deception.

In summary, the ethical guidelines for the use of deception appear to have partially alleviated harm to subjects from research participation. Psychologists, at the least, are more aware of ethical issues and are reminded of them more frequently. However, the ethical issues are those of subjects as viewed by experimenters; the subjects'

opinions on these issues need to be more directly assessed.

Debriefing Effectiveness

Proponents of deception have argued that deception is an ethical practice because the use of a debriefing session after the experiment will remove any ill effects for the subject stemming from his participation in the experiment. The use of debriefing can be evaluated in two ways: does it effectively remove any ill effects of the deception, and does it affect in a negative way the subject's participation in later research?

In regard to the first question, Walster, Berscheid, Abrahams and Aronson (1967) explored the use of debriefing to remove the effects of false feedback to subjects concerning sociability. They hypothesized that it would be more difficult to debrief successfully (which they defined as returning to pre-experimental state) a subject who has received false information on some aspect of himself with which he is currently concerned than it would be to debrief a subject who has received information irrelevant to current concerns. They manipulated pre-experimental concern and experimental feedback on sociability for high- and low-concerned subjects. Their results indicated that there was no difference between high- and low-concerned subject in difficulty of debriefing. But for all subjects, there was an effect created by the experimental false feedback that lasted through the debriefing to when the subjects rated themselves on a sociability index.

Holmes (1976 a,b) reports, in two related articles, data on debriefing effectiveness. He differentiated between dehoaxing, in which subjects are told the truth concerning earlier information they

received during an experiment, and desensitizing, in which subjects' feelings concerning the behavior they used in the experiment are dealt with. He reported on an experiment by Abrahams (1967) in which two questions were investigated concerning dehoaxing. First, was dehoaxing effective in persuading subjects that the false information they had received was in fact bogus? Second, was dehoaxing effective in removing any false conclusions subjects had developed on the basis of the original erroneous material? The subjects participated in two, allegedly separate, experiments. In the first experiment, subjects worked on problem solving tasks and received rather vague feedback on their performance. Prior to the second experiment, subjects were given false-favorable or false-unfavorable Rorschach and MMPI interpretations. The subjects then rated descriptions of college sophomores, received dehoaxing information about the MMPI and Rorschach bogus interpretations, and returned to complete the first experiment. The dependent variable was subjects' estimation of performance prior to a second trial of problem solving tasks. The results, analyzed by Abrahams, revealed no significant effect on subjects' estimation of performance attributable to the false feedback in experiment two. However, the data, reanalyzed by Walster, Berscheid, Abrahams and Aronson (1967), did show a significant effect of the false feedback. It is unfortunate that the data did not provide clear support for or against the effectiveness of the dehoaxing because the design of the experiment would have allowed a strong test of the research question.

Bowerman (1977) used a mailed questionnaire to determine subjects' attitudes concerning the experience of deception two months after they

had been deceived and debriefed (dehoaxed). During the experiment, subjects had received false feedback on an intelligence test, and then made a variety of ratings on other persons. They were then debriefed. The questionnaire determined their self-ratings for intelligence, sociability, confidence in personal future, among others, for two time periods - at the time they graduated from high school and at the present time. The results of the analysis indicated that the subjects who had received the false-negative intelligence feedback rated their intelligence significantly lower than subjects in the false-success condition. It should be noted that this lower self-rating was for both the "high school" and "present" time periods. Bowerman interpreted these results as evidence of the failure of the debriefing (dehoaxing) that subjects had received; in addition, the subjects' ratings of high school intelligence as equally high or low to college intelligence led Bowerman to conclude that the subjects re-evaluated their past histories as well as their present capabilities in light of the erroneous information they had received.

Support has been found, however, for the effectiveness of the debriefing procedure in removing experimentally-induced effects. Holmes and Bennett (1974) induced stress in their subjects by leading them to expect the stimulation of painful electric shocks. Comparing the debriefed group and the nondebriefed group, both of which had received the stress induction, with a nonstress group, they found the stress measures of pulse rate and respiration significantly higher following the experiment, signalling the effectiveness of the stress induction. Following the debriefing, however, the stress measures

showed no changes in arousal from the pre-experimental base rate. Holmes and Bennett argued that their results supported the effectiveness of the debriefing procedure in removing stress experimental effects. Additional support for this argument came from the replication of Bowerman's (1977) study by Holmes (1976). His follow-up questionnaire results did not replicate those of Bowerman's, and failed to demonstrate significant effects due to the debriefing.

Overall, the evidence for the effectiveness of the debriefing process in removing experimentally-induced beliefs in subjects does not appear strong. Bowerman (1977), Walster et al. (1973) and Abrahams (1973) suggest that there are results of the deception not removed by the debriefing process. Holmes and Bennett (1974) presented data to argue the other side of the debate; however, due to dubious data analysis, their findings are not interpretable as strong support for the efficacy of debriefing. It is possible that the debriefing experience does not succeed in its aim, not because of the experimenters, but because of the subjects' attitudes toward research participation. For example, Rapaport (1977) suggested that expectancy is strongly related to the discounting of information received. Subject expectancies can revolve around four dimensions: relating to self or other, relating to positive or negative outcome, being realistic or unrealistic, and being confirmed or disconfirmed. His argument can be extended to the debriefing efficacy problem: perhaps the subject's expectancies concerning the experiment affect to a great extent the success of the debriefing process.

The question concerning the effectiveness of the debriefing procedure may not be correctly asked; perhaps the type of debriefing affects its effectiveness. Ross, Lepper and Hubbard (1975) gave their subjects false feedback on a discrimination task; subjects were then thoroughly debriefed concerning the deception. After the debriefing, subjects completed questionnaires measuring the extent to which the initial false feedback had survived the debriefing process. For those subjects whose debriefing was "typical" (outcome debriefing), in that they were told that they had been deceived and they received information on how the deception had taken place, there was a significant perseverance effect of the initial false information. For those subjects, however, who not only received the usual debriefing information, but also were engaged in a discussion by the experimenter about the phenomena of the perseverance of false information and the persistence of false self-attributions (process debriefing), there was no effect of the initial false information. Their results seem to confirm that the usual debriefing style may not remove experimentally-induced effects in subjects, but that it is possible successfully to debrief a subject by dealing both with behavior and expectations.

The second question to be asked concerning debriefing is whether its use adversely affects a subject's participation in a subsequent experiment. Keisner (1971) investigated the effects of deception and debriefing on subject responsiveness to demand characteristics in a later experiment. He anticipated that deceived and debriefed subjects would be less likely to respond to experimenter expectancy cues in a subsequent study than would subjects who had been deceived but not

debriefed. He found that the deceived and debriefed subjects did respond significantly less to the information they received from the experimenter regarding the expected outcomes in a reaction time study than did those subjects who were also deceived but not debriefed.

Similar research by Brock and Becker (1966) investigated the consequences in later research when subjects had been deceived and debriefed in an earlier study. They deceived, then debriefed subjects in a preliminary experiment; in addition, they withdrew a promised monetary reward explaining to the subjects that it was motivational in nature. During the subsequent experiment, subjects were led to believe they had caused either much or little damage to experimental equipment. The dependent variable for the experiment was the number of subjects who signed a counter-attitudinal petition. Results showed significant effects for high versus low damage only. The authors concluded that deception and debriefing effects were not as salient as supposed. It seems likely, however, that their criterion experiment was too narrow, and did not test adequately the effects of deception. Fillenbaum (1966) also deceived and debriefed subjects and then followed the preliminary experiment with a study of incidental learning. He found no differences attributable to deception; again, however, the learning test may not have been an adequate measure of the effects of deception.

Overall, then, the evidence for the effects of deception and debriefing on subjects' participation in later research seems to indicate that there may be some biasing effect. Brock and Becker's (1966) results may indicate that the similarity of the test experiment to later experiments may be the most important factor in any effect.

Keisner's (1971) study indicated less responsiveness to experimenter's cues concerning expected outcome. It may be that subjects are less responsive to obvious cues, but as responsive to more subtle cues in later studies.

A more comprehensive study by Silverman, Shulman and Wiesenthal (1970) cast additional light on the possible effects of a subject's having been deceived and debriefed. Subjects either participated in a problem-solving study involving deception and debriefing, or in a memory-task control study with no deception or debriefing. Both subject groups then completed a series of tests dealing with aspects of personality and persuasibility. Results showed a clear demonstration of the effects of the deception and debriefing experience: those subjects were significantly more defensive, more dominant, and less compliant than non-deceived subjects. The results suggested that deception increased the tendency for more favorable self-presentation and decreased compliance with demand characteristics. It seems necessary for further research, in this vein, to identify possible biasing effects of deception and debriefing experiences and to detail under what conditions and for which subjects these effects take place.

It appears, in summary, that subjects' responses to the experiences of deception and debriefing are more complex than previously believed. It is also to be expected that subjects vary considerably in their reactions to the experience of research participation. A more direct acquaintance with subjects' responses to deception and debriefing, and more empirical analyses of their responses, might allow for more faith in the controls that deception and debriefing are purported to provide.

Use of Deception

Arguments favoring and opposing deception also have emphasized the methodological advantages and disadvantages occurring with its use. Perhaps the most important methodological argument for deception is that its use fosters experimental realism (Aronson and Carlsmith, 1968). The basic requirement for experimental realism is that a subject's behavior be natural or spontaneous with respect to the stimulus conditions; the subject must not be self-consciously evaluating his actions in the light of some pre-experimentally prescribed standard of behavior, but rather must react to stimuli assuming that the stimulus conditions are real and/or that the consequences of his behaviors are genuine. By means of the experimenter's convincing "cover story," the subject's attention is diverted from the true hypothesis and thus his behavior is natural or spontaneous with respect to the experimental manipulations.

Deception introduces reality into the experiment in another way, namely by making the experiment externally valid (Freedman, 1969). Even though the experiment occurs in a laboratory setting, where the behavior of the subject is usually induced or manipulated by the experimenter, the use of deception allows the researcher to view the experiment as an analog situation to the "real world" where results will be generalized.

Deception has been used to minimize the presence of "demand characteristics" in the experimental setting. If the subject is unaware of the hypotheses under test, he is able to behave naturally toward the stimuli. His ignorance of the true purpose of the experiment allows

the experimenter to presume that the subject is reacting in a way that is not biased by any personal considerations the subject may hold concerning the experimenter or the purpose of the experiment. This ignorance is part of experimental realism in that the subject is assumed to be behaving in the laboratory setting in an unbiased manner (Aronson and Carlsmith, 1968).

However, methodological questions about deception have been raised. Seeman (1964) argued that when subjects have participated in an experiment involving deception, they are no longer naive subjects; when they participate in subsequent studies, they bring with them a variety of attitude sets, possible hypotheses, and personal theories that stem from their experience of having been deceived in previous studies. Much of the work on the effects of deception/debriefing in later research supports Seeman's arguments. To assume that deception facilitates a subject's acting spontaneously and without self-consciousness is to go against the assumption that, especially in college populations, students are aware of the practice of deception and, in fact, approach participation in psychology experiments with the knowledge that they are likely to be deceived about some aspect of the study.

These expectations can affect the results of the experiment. Orne (1962) and Rosenthal (1963) described the experiment as having demand characteristics. They argued that while a subject is assumed to be a passive responder, in reality he is an active participant in his efforts to be a "good" subject; he attempts to perceive and understand the demand characteristics of the experiment and the behavior that is expected of him. Experiencing deception in earlier

experiments would increase the likelihood of this behavior. For example, experimental effects in figure-ground perception have been found to be directly related to the subject's awareness of the demand characteristics of the situation (Page, 1968). Page (1972) also found that in a verbal operant conditioning paradigm, subjects initially learned a correct or incorrect hypothesis about the reinforcement contingency. The subjects could then cooperate with the demand characteristics or not.

In summary, if subjects do formulate hypotheses, the argument for deception that its use minimizes the presence of demand characteristics is weakened. If the subject in the experimental situation either knows the deception or knows there is a deception, the value of using the deception is nullified. If however, the subject knows merely that the experimenter may be concealing something from him, his suspicions may approximate the true deception to a greater or lesser degree. Whether the subject's definition of the experiment and the experimenter's definition are in harmony or not, the experimenter can no longer assume that the defining situations in the experiment are the ones under which the subject is operating.

Deception Alternatives

If the above arguments against deception are accepted as valid ones, the question must be asked: What can take its place? Several alternatives have been suggested. In effect, they deal with deception and informed consent not as an either/or issue, but rather with deception on a continuum of concealment. An alternative approach that investigates anticipated informed consent using a sample of potential

subjects has been offered by Berscheid, Baron, Dermer and Libman (1973). Another alternative to the use of deception is roleplaying, which itself has several variants: forewarning, prebriefing, full disclosure.

Berscheid et al. (1973) investigated an alternative to deception that could be considered a role-play sampling procedure. In this study, they determined the circumstances under which a subject would consent to participation in a study by utilizing a procedure in which a sample of potential subjects was presented with descriptions of both stressful (shock, pain, inducement of unethical behavior) and unstressful experiments. These descriptions varied on amount of information disclosed, including rationale, procedure, debriefing information, desirable and undesirable behavior expectations. Although this approach is subject to the liabilities of any role-playing procedure in that a subject may accurately predict his behavior in an experiment or his feelings following participation, Berscheid et al. hoped to begin an approach which could provide ethical data to an experimenter without sacrificing experimental realism.

Their results indicated significant effects for both presence of stress and of information. Subjects were much less willing to participate in the stressful experiments. In addition, subjects were less willing to participate when provided with more information concerning the experiment; subjects receiving rationale only were most willing to participate. With a focus on definite refusal, there was a slight tendency for the inclusion of debriefing information to increase consent.

Although Berscheid et al.'s method of role-play sampling would provide information to an experimenter concerning a subject's opinion

of his proposed paradigm, another approach has been suggested to enable the subject and the experimenter to work in a different manner to obtain experimental data. Kelman (1967) introduced the possibility of roleplaying as an alternative to deception. Roleplaying would be a way in which to involve the subject in the data collection process; in addition, Kelman argued that roleplaying would produce better data because as a method it would avoid the sources of artifact and bias inherent in the use of deception. Ring (1967) agreed that roleplaying could be a valid alternative; he suggested that the subject be informed of the experimental manipulations and be asked to help the investigator carry out the experiment by acting the role of subject.

Schultz (1969) characterized roleplaying as an approach where the subject is trusted to give a valid approximation of his probable behavior were he an uninformed subject. He believed that using roleplaying would be to use the subject as more of an active participant than a passive responder. According to Schultz, since the subject is a direct and influencing participant of the research, the experimenter should use this participation constructively rather than pretend that it doesn't exist.

The main criticism of roleplaying centers on the subject's behavior as projected, anticipated, or probable, but not real. Aronson and Carlsmith (1968) have argued that roleplaying could never produce valid results because the subject's behavior lacks realism. Because realism means that the subject's behavior is natural or spontaneous, they argued that realism could not be a characteristic of behavior produced while role-playing. They argued that to produce the quality

of experimental realism, there is value in deception because the subject's attention is supposedly diverted from the true hypotheses.

Some support for their arguments comes from the results of Simons and Piliavin (1972). They compared groups of subjects deceived to various degrees with both minimally role-playing and non-role-playing informed subjects. The context was Lerner and Simmons' (1966) study of reactions to a victim of misfortune. Using four levels of information disclosure - subjects deceived to method and purpose, subjects deceived to method but not purpose, subjects deceived to purpose but not method, and subjects not deceived but role-playing a deceived subject - they found that complete deception was necessary for the differential devaluation effect to occur. Simons and Piliavin, however, argued against the unthinking use of deception; they believed it is theoretically relevant to investigate how subjects define the experimental situation, and therefore roleplaying could be a valid approach for some experimental paradigms.

A related argument against the use of roleplaying is that the subject's response in the experiment would only provide information about what he thinks he would do, not necessarily what he would do were he uninformed in the same situation. Freedman (1969) argued that whether subjects can or cannot predict how they would behave in a situation is a testable question (cf. Milgram, 1965; Doob and Gross, 1968), but the main weakness of roleplaying is that it would always produce second-rate data. The validity of the subject's projected responses would have to be ascertained by performing the real experiment (i.e., using deception in the same experimental paradigm) so as to know how

much faith should be put in the responses gotten by role-playing subjects.

Darroch and Steiner (1970) dealt with just this concern, of whether subjects can know how they would behave in certain situations in their experiment. They noted that Bem (1965, 1967) contended that an observer could duplicate the belief statements of an experimental subject "if this observer is told the behavior of the subject and the apparent controlling circumstances of that behavior (p. 203)." They also noted, however, that Penner and Patton (1968) found that observers did a poor job of predicting outcomes of forced compliance research. Darroch and Steiner compared the behavior of role-playing subjects to deceived subjects in a forced counter-attitudinal compliance experiment. Subjects were asked to present counter-attitudinal speeches to an agreeing or disagreeing audience; in addition, subjects were introduced as either reporting on their own views or on assigned views. For each variable - estimated time of speech, self-rating of performance, and post-speech attitude - there was a significant main effect for subjects: the role-playing subjects had failed to duplicate the scores of the deceived subjects. Although the scores did not match, Darroch and Steiner noted that the same relationships between responses existed. They concluded that the findings suggested that the efficacy of role-playing depends on whose role the subjects are asked to play and on the character of the hypotheses under test.

Some empirical evidence has been obtained for the use of role-playing. Greenberg (1967) used a role-playing procedure in a replication of Schachter's (1959) study concerning high and low anxiety states

in first-born and later born subjects. In the original experiment, the manipulation involved instilling in the subjects the belief that they would receive high or low levels of electric shock and then observing the affiliative behavior of the subjects while they were waiting for the shock series. Greenberg used role-playing instructions and asked his subjects to play the part of an experimental subject, acting "as if this was a real situation."

When Greenberg analyzed his results, the anxiety manipulation (tested by a self-report measure) was significant only for first-born and only-child subjects. His analysis revealed no significant differences in affiliative behavior. Greenberg then repartitioned his subjects into two groups on the basis of perceived anxiety, those subjects who had rated themselves as high anxious and those subjects who had rated themselves as low anxious. When the data were reanalyzed, the results did replicate Schachter's finding that high anxiety produces greater affiliation than low anxiety among only-child and first-born subjects. However, using perceived rather than manipulated anxiety confounded the original intent of the study because, in effect, Greenberg showed that the role-playing subjects were unable to "take the role" of the deceived subjects.

Conformity in a dyadic situation was investigated by Willis and Willis (1970). They replicated an earlier study (Willis, 1965) using two groups: a deceived group, who was given misleading information about the purpose of the study; and a role-playing group, who was given explicit information about the experimental manipulations but was asked to role-play a deceived subject. In their study, there were

two main hypotheses: one involved a main effect, that subjects would conform to their partners more if they perceived their partners as more competent on the experimental task; and an interaction hypothesis, that there would be a greater difference in net conformity under an instructional set stressing efficient use of information than under an instructional set stressing social influence between partners.

In comparing the results of the deceived subjects and the role-playing subjects, Willis and Willis found that all subjects showed the main effect hypothesized concerning overall conformity. Only the deceived subjects, however, showed the interaction effect of perceived task competence and instructional set. Willis and Willis concluded that roleplaying provided an appropriate alternative as far as obvious main effects, but failed for more subtle interaction effects. Their data supported their conclusion, but the indictment against roleplaying should be limited to the form which they investigated, which was full disclosure to subjects prior to experimental participation.

The two contributions of the study by Horowitz and Rothschild (1970) were first, comparing roleplaying and deception in the same experimental design, and second, identifying two variants of roleplaying which differed in the amount of information about the experiment provided to the subject as a basis for roleplaying. The context was a modification of Asch's (1952) study on conformity. Their design included two levels of group size and three levels of information disclosure: a deception condition, a prebriefed role-playing condition (where subjects were told virtually everything about the experiment), and a forewarned role-playing condition (where subjects were

told only that the experiment was not real and that they were to play the part of subjects). The dependent variable was the number of errors (conforming responses) made on the 14 critical trials where the "group's" judgment was in error.

The analysis of data indicated that the deceived and forewarned subjects manifested more conformity than did the prebriefed role-playing subjects. The authors concluded that the forewarned condition can be an effective substitute for deception because it appears to "mitigate the ethical pitfalls of deception without vitiating the experimental realism of the manipulations (p. 226)." The significance of their results is that roleplaying was perceived, although not explicitly described, on a continuum. The prebriefing variant previously investigated is closer to the end of completely revealing by explicitly telling the subject about the experimental manipulations, while the forewarning variant is closer to the deception end by not telling the subjects about the manipulations and yet maintaining ethical conditions by establishing a collaborative condition with the subject and also by telling the subject that there is going to be deception involved in experimental participation.

A later replication of the study by Willis and Willis (1970) was done by Wahl (1972). He compared the two identified forms of roleplaying on three criteria: the ability of the role-playing subjects to replicate an established experimental effect; the ability of the role-playing subjects to achieve experimental realism (as measured by their level of involvement); and the amount of suspicion present in the subjects. Wahl asserted that subjects not only must show the experimental

effect, but that they must show it for the right reasons. For example, if the prebriefed subjects replicated the experimental effect but had a low level of involvement, their responses must be interpreted differently than if they had shown the effect while being involved to a greater degree.

The analysis of his results confirmed both the main effect and the interaction hypotheses of Willis and Willis. Of the three groups, the forewarned group was rated as the most involved and the prebriefed group as the most suspicious. If Wahl's conclusions are extended, it seems possible that the more successful variant of roleplaying is the forewarned variant. It seems likely that these subjects were more involved because they were given some information about the experiment, but more important, were told that there was some information that they were not getting. Being asked to act like subjects rather than being asked to be subjects would create a more open atmosphere between subject and experimenter, a condition cited as more exemplary of ethical treatment of subjects (Kelman, 1967; Jourard, 1971).

Mitchell (1975) further extended the idea of a continuum of disclosure with the paradigm of Willis and Willis (1970). She identified three forms of roleplaying: partially prebriefed, where subjects were informed of the true purpose but not the method of the experiment, and full prebriefing, where subjects were informed of both purpose and method. In addition, she used a forewarned form of roleplaying, where subjects were told that they were to act the part of subjects and that there would be deception involved in the experiment. Her results did not replicate those of Wahl, as none of the role-playing groups showed

the main effect of conformity or the interaction effect of task competence with instructional set. It should be noted, however, that in her studies the deceived subjects also failed to replicate results from earlier studies. It seems that further work with roleplaying as a continuum of disclosure would be appropriate to identify optimal amounts of disclosure for varying experimental paradigms.

Holmes and Bennett (1974) led subjects to expect the stimulation of painful electric shocks. Although their study was investigating the effectiveness of debriefing, they also compared the performances of role-playing subjects against deceived subjects on both self-report anxiety measures as well as on stress measures (pulse rate and respiration). The role-play group was a prebriefed variant, where the subjects received information as to purpose and method of the experiment. Analysis of change scores from base rate to the period of interest (anticipation or stimulation) led to the following conclusions: during the anticipation period prior to the supposed administration of shock, the role-play subjects did not accurately simulate the arousal data of the noninformed subjects; during the stimulation period, the role-playing subjects portrayed themselves on self-report measures as equally anxious as the noninformed group, but again, did not duplicate the stress measures of the noninformed group. Holmes and Bennett concluded that their results do not provide any support for the contention that roleplaying is a viable alternative to the use of deception.

In summary, roleplaying as an alternative to deception has its weaknesses. The first is the problem that the data that subjects are giving while role-playing is only that which they suppose that they

would give while in an experiment; the contention of Aronson and Carlsmith that such data lack experimental realism seems supported. However, it is an empirical question whether subjects can in fact learn to be more effective roleplayers, one which has not been investigated. Second, roleplaying has received limited empirical support. Although Wahl, and Willis and Willis, found support for certain forms of roleplaying, there is a large amount of evidence to the contrary. Again, it is possible that there exists on a continuum of disclosure an amount of information that, given to subjects, will facilitate most effective roleplaying.

The practice of comparing role-playing responses to deception responses has been severely criticized by Forward, Canter and Kirsch (1976). Their argument is that role enactment methods (to encompass the variants of roleplaying and simulation methods) are based on a more inclusive conceptualization of human behavior. They argue that role-playing responses and deception responses are not directly comparable because a greater range of human responses (i.e., choice, self-representation) are included in role-playing responses. Secondly, role-playing responses tap more of intentional human behavior, while deception responses indicate more incidental behaviors. And, third, they assert that if, in fact, deception and role-playing responses are to be directly compared, it should be role-playing responses that are the criterion rather than the deception responses. Forward et al. point to the future of role-playing responses by suggesting several areas of possible use: role enactment methods can serve to allow the experimenter to investigate the variation of meanings of behavior

among persons; role enactment methods can also include more co-participatory behaviors between experimenter and subject. By making more systematic use of the experimenter and subject relationship, new areas of need (such as a more carefully constructed role enactment situation) and new areas of investigation (i.e., role-actor congruence) are suggested.

It seems strange that the search for deception alternatives which involve active subject participation has not focused more closely on the opinions and attitudes of the subjects involved. To create an experimental, yet collaborative, relationship involves more change in the pattern of experimentation than reading different sets of instruction. It appears likely that only as the subjects' motives are better understood can they be invoked in the search for ethical treatment of subjects.

Subject Dispositions and Artifact

It appears that the issue of deception versus fully informed consent is not as easily resolved as was thought. There is conflicting evidence and opinion on the ethical and methodological pros and cons of deception and its alternatives. It appears, however, from a review of the literature that subjects have been assumed to react uniformly to the experience of deception and/or debriefing. It has been asserted that the deception and debriefing experiences bias subjects (i.e., Silverman et al., 1970), but this effect is not universally supported by empirical data. Deception is alleged to break subject-experimenter trust (Baumrind, 1971) and to sever the relationship (Schultz, 1969), but it has also been demonstrated (Sullivan and Deiker, 1973) that

although some subjects believe deception is a harmful practice, others do not. It is proposed that this assumption of uniformity of subjects is a myth, and its acceptance is responsible for the lack of clear support for or against the practice of deception.

It has been demonstrated (Orne, 1962; Rosenthal and Rosnow, 1969) that any experiment suffers from the presence of artifact. As a general label, the study of this artifact has been termed the "social psychology of the psychology experiment (Orne, 1962)." Traditional experimental inference has followed the classical model statement of functional relations "y = f(x)" (Boring, 1969). The specification of the independent variable "x," to which the results are attributed, is the problem. The independent variable may be contaminated by unspecified variables which can affect the results, and lead the experimenter to faulty conclusions. The study of research artifact has focused on these contaminants of x, with the goal of being able to control them so that the "true" relationship of x to y may be specified.

In 1962 and 1970, Orne focused on the ways in which subjects can depart from the traditional classical model of determinism, and he proposed a method of controlling these departures with his discussion of demand characteristics and quasi-controls. Orne asserted that the behavior of "taking part in an experiment" carried with it defined roles for both the subject and the experimenter. Since the subject has a high regard for the aims of science and experimentation, he feels he has a stake in the outcome. In order for him to be able to believe he has been a good subject, he must feel that he made a useful contribution. This assertion led Orne to conceptualize the subject's behavior

in problem-solving terms; a subject searches for those cues which might convey the hypothesis, and these cues become the determinants of his behavior, or the "demand characteristics" of the experiment. In addition, Orne proposed the use of "quasi-controls" to control for these demand characteristics, where subjects participate actively in uncovering explicit information about possible demand characteristic effects. In this way, the experimenter could understand, although perhaps not measure, why a subject behaved in a certain way during an experiment.

For example, Golding and Lichenstein (1970) evaluated the effectiveness of deception in a replication of Valin's (1966) bogus heart rate feedback procedure. Their interview techniques constituted an example of the quasi-controls suggested by Orne, in that they did not permit any definitive inferences to be drawn about the dependent variable, but they did allow the experimenters to focus on the reasons for the subjects' experimental behavior. In their experiment, Golding and Lichenstein administered Valin's bogus heart rate feedback to subjects in three levels of information disclosure; by means of a confederate-delivered tip-off prior to experimental participation, subjects were either informed, made suspicious, or remained naive with regard to the deception. After the experiment, subjects were debriefed with one of two interviewing styles. These styles differed as to their demand characteristics: the pact of ignorance set attempted to establish a complicity between the subject and the experimenter such that the subject would not reveal compromised data, while the scientific integrity set attempted explicitly to condone the legitimacy of subjects'

revealing compromised data. Golding and Lichenstein found that informed subjects in the interview set emphasizing scientific integrity admitted significantly more prior information than did subjects in other cells. Confessed awareness of suspicion, however, did not relate overall to prior information received or to interview type; in addition, confessed awareness or suspicion was uniformly low across cells.

Although Orne advocated the use of quasi-controls to investigate subject effects, the results of Golding and Lichenstein are not encouraging. It seems likely that subjects do not view honesty as an appropriate part of their role as subject. The data of Golding and Lichenstein provide the information that both aware and naive subjects produced equivalent data, and did not help the experimenters with any additional insights concerning their experimental behaviors. A more fruitful line of investigation might be to attempt to isolate subject effects by experimentation in order to predict and control their influences over experimental data.

Researchers have identified several forms of subject-related artifact. The motivation of the subject to be present in the experiment has received considerable attention, for the characteristics of the sample affect the generalizability of the experimental results. The volunteer subject is of interest because of the threats to external validity, if they have personality attributes different from non-volunteers, and to internal validity, if during the experiment they may be more or less susceptible to demand characteristics and experimental cues. A large number of studies comparing the volunteer to the

non-volunteer subject have been conducted, and the results have been summarized by Rosenthal and Rosnow (1969). Briefly, the volunteer subject differs from the non-volunteer subject on a number of dimensions. The strongest evidence indicates that volunteers tend to be of higher intelligence, better educated, and higher in occupational status. In addition, volunteers tend to be more authoritarian, especially when asked personal questions. Riecken (1962) noted that a volunteer subject's aim was to put his "best foot forward." This conclusion is somewhat supported by evidence indicating volunteers to be more sociable, more arousal-seeking, and more unconventional. The major concern, however, with the volunteer subject is whether these differences bias experimental results. Rosenthal and Rosnow (1969) could not cite evidence in support of bias. However, Horowitz (1969) and Hood and Back (1971) both found significant differences, the former's volunteer subjects showing a positive relation between fear arousal and attitude change as compared to an inverse relation for non-volunteers, and the latter's volunteers being more self-disclosing. An additional problem that affects interpretation of results is the strong possibility that volunteerism interacts with other motivational and dispositional variables. It seems that a final judgment on the effects of volunteer subjects is not possible until further research is conducted, with an emphasis on determining the influence of subject variables on the biasing effect of volunteer subjects.

An additional biasing effect comes from the participation of the subject in previous experiments. The literature on subjects' experience with deception and debriefing was reviewed earlier in connection

with methodological arguments concerning the debriefing experiment. The most supportable conclusion that could be drawn from the relevant research is that there is no clear resolution of the argument yet available. Brock and Becker (1966) and Fillenbaum (1966) both could not find a bias in their criterion experiments attributable to the subjects having been deceived and debriefed. However, such an effect was found by Keisner (1971) and Silverman et al. (1970). At the very least, the data suggest that there is no singular effect of prior history. For some experimental paradigms, such as verbal conditioning, prior history effects may be reasonably expected as the hypothesis is relatively obvious. However, for paradigms with less obvious hypotheses, there may not be a strong effect. An additional consideration is that prior history may affect subjects differentially. The research on effects of deception and debriefing appears to be based upon a uniformity of subjects assumption; it is possible that reliable differences between subjects interact with prior experience. Again, more research needs to be conducted in this area to determine which effects are shown by which subjects.

A third biasing effect that comes from use of human subjects is subject suspicion. As Campbell (1969) noted, subject suspicion arises most basically from the subjects' knowledge that they are in an experiment. The reactive effects of this awareness are many, with suspicion being one facet of the subject awareness. McGuire (1969) noted that the issue is more properly "suspicion of what," and argued that without deception, there would probably not be as much suspicion of the experimenter's intent, although there would still be the subject's

awareness of experimental participation. For example, Silverman (1968) found greater compliance with a counter-attitudinal message in situations clearly designated to subjects as experiments. The extent of the subject's suspicion of the experimenter's intent, then, is partially a function of the subject's prior experimental participation. But suspicion is also a function of the subject's knowledge about psychological research in general, and a function of the suspicion of intent present in most personal interactions.

Serious study of subject suspicions is a recent phenomenon. Stricker (1967) reviewed 88 published studies that used deception, and found that only 21 of these reported any data on subject suspiciousness. To further explore this area, Stricker, Messick and Jackson (1967) appraised subjects' suspicions in two conformity procedures - a simulated Asch group conformity paradigm and a questionnaire task with fictitious norms. Stricker et al. found that many of the subjects suspected correctly that the purpose of the studies was to investigate conformity. Male subjects were generally more suspicious than female subjects. Correlates of subject suspicion included acquiescence and a social desirability response set. Especially important was the finding that suspicious subjects showed significantly less conformity. In general, then, the Stricker et al. data seem to lend support to the notion of a suspicious subject who, in certain experimental paradigms, may produce biased data because of his suspicions.

Page (1969) viewed suspicion or awareness as a dichotomy; either a subject is aware or he is not. He cited Insko and Oates (1966) who found a strong relationship between post-experimental awareness of the

relationship between two lists and the so-called conditioned attitudes. It would seem, however, that suspicion is best viewed on a continuum. Rubin and Moore (1971) measured suspicion as a continuous variable, and found it strongly and inversely related to amount of conformity. The way in which suspicion is viewed - as a dichotomy or on a continuum of awareness - would strongly affect its assessment. Funnel-type interviews may discover suspicion among subjects more efficiently (cf. Page, 1972), but they may also create suspicion (cf. Berkowitz, 1971). However, more direct questions of suspicion, treating it as a dichotomous variable, while not increasing suspicion also may not detect it efficiently or accurately.

Clearly, subject suspicion is a complex problem. The concept of suspicion is ambiguous and its detection inefficient. It is possible that subject suspicion is something of a developmental process within the experimental situation. For example, Page (1972) proposed a sequence that begins with contingency awareness (what is happening in the experiment), progresses to demand awareness (what the experimenter wants me to do as the subject), and ends in a decision about compliance (should I do what the experimenter wants or not). This sequence resembles what Orne (1962) labeled the problem-solving nature of the subject role. Clearly more research in this area is indicated to design more suspicion-reducing procedures and to increase accuracy in detecting suspicion without having the assessment itself be reactive. Finally, more careful study of the effect of subjects' suspicions is needed.

A fourth area of bias inherent in the use of human subjects is the effects of the motivations and attitudes that subjects bring with them to experimental participation. These effects are subsumed under the title of "subject effects" or "subject roles," and are related to Orne's discussion of demand characteristics.

> "The experimental situation is one which takes place within the context of an explicit agreement of the subject to participate in a special form of social interaction known as 'taking part in an experiment.' Within the context of our culture, the roles of subject and experimenter are well understood and carry with them well-defined mutual role expectations" (Orne, 1962, p. 777).

The point of Orne's subject role is that there are reliable differences between subjects that are not a function of the experimental manipulations, but rather are a function of the subject as a person, with his peculiar motivations, needs, and experiences.

Following Orne's statement, researchers more frequently discussed subjects' behavior in terms of role-related concepts. This classification attempt greatly increased the roles mentioned so that Walker (1971), within ten years of Orne's article, was able to define sixteen such subject roles. The <u>good</u> subject (Orne, 1962; 1969) attempts to help the experimenter by behaving in such a way as to confirm the experimental hypotheses. The <u>faithful</u> subject (Fillenbaum, 1966) in contrast is very honest and scrupulously follows instructions. The <u>deceived</u> subject causes many experimental problems, including a set for suspiciousness (e.g., McGuire, 1969). The <u>aware</u> subject, whose awareness ranges from the total awareness of purpose and method to the totally unaware, may have a bias that subsumes many of the other roles. Campbell (1969) in fact argued that subject awareness accounts for the

many other mentioned sources of artifact and bias.

The concerned subject is either apprehensive about being evaluated by the experimenter (Rosenberg, 1969) or because of the experimental manipulations. The willing or volunteer subject has received considerable research attention (e.g., Rosenthal and Rosnow, 1969). The recidivistic subject is also the object of much experimental interest. There is also a bored subject, who may detrimentally affect experimental outcome (cf. Aiken and Lau, 1967). The bored subject may be one part of the traitorous or negativistic subject, who leads to Masling's "screw-you" effect. In contrast, there is the pleased subject (e.g., Bryan and Lichenstein, 1966; Doherty and Walker, 1966) who enjoys participating in research, and the guilty subject (Freedman, Wallington and Bless, 1967). There is also an infected subject, who models others (Wheeler, 1966); a second guess subject; a laughing subject, who is amused by the experiment; and the missing (no-show) subject.

In an attempt to control for experimenter bias, some researchers have automated the experiment to a greater or lesser degree. This procedure, however, creates the lonesome subject (Walker, 1971). The presence or absence of the experimenter may affect subject behavior in ways unrelated to the specific hypotheses under test. For example, the presence of the experimenter may increase nonspecific motivation in the subject, which may in turn interact with other subject variables.

Some of these subject classifications refer to subject behaviors, while others are more descriptions of situations. Clearly, the systematization needed to give utility to these roles was not evident. Weber and Cook (1972), in a major review, condensed the subject typologies

into four subject roles: the good subject, the faithful subject, the negativistic subject, and the apprehensive subject. The good subject's motivation arises from Orne's (1962) discussion of demand characteristics and his conception of a good subject: namely the "good" subject sees it as his task to ascertain the true purpose of the experiment and then to behave in such a way as to confirm the experimental hypotheses. Levy (1967) investigated the performance of the good subject, or as he termed the role the beneficient subject, in a Taffel-type verbal conditioning paradigm. He compared the performance of aware subjects, who had been tipped off by a confederate as to experimental purpose and method, with that of the unaware subjects. In addition, he compared their post-experimental interviews. Levy found that there was no difference between the informed and uninformed subjects on the trial block in which they reported first awareness of the experimental contingency. However, significantly more informed subjects were classified as aware by the debriefing experimenter. As for the verbal conditioning results, the informed group gave significantly more I-We responses. The good subject role seems a tenable one in light of the results of Levy (1967); it appears that they attempt to give responses they think will help the experimenter. This role, then, entails both the motivation to perform in a certain way and the interpretation of experimental cues.

The second subject role is that of the faithful subject. According to Fillenbaum (1966), a faithful subject believes that a large amount of docility is required for research participation. In addition, the subject considers as his main purpose to give the

experimenter as accurate as possible a representation of his everyday behavior; to this end, the subject scrupulously will follow experimental instruction, and will avoid acting on the basis of any suspicions he may have about the experiment. To investigate the faithful subject role, Fillenbaum (1966) manipulated suspicion by deceiving and debriefing some of the subjects on a task immediately preceeding the critical incidental learning task. He found that the effect of the deception and debriefing on the incidental learning was minimal. More importantly, the suspicious subjects did not act on their suspicions, but rather were more "faithful" about their performance.

Further research on the faithful subject role was conducted by Fillenbaum and Frey (1970). By questionnaire, they selected 18 subjects to be trustful and 17 subjects to be suspicious. The subjects were told their participation would be in an experiment on complex information processing. After their participation in two sequential experiments with a short debriefing after the first, the subjects were debriefed as to their awareness of the purpose of the second experiment, which was an incidental learning task. An analysis of variance on the results found a main effect on incidental learning of awareness, but not of suspicion. The conclusion drawn from this data by Fillenbaum and Frey was that the suspicious subjects adopted the faithful role. It seems likely that in the experiment the subjects were told (a) to do certain things, but also were directly or indirectly (b) invited to believe certain things. Although there are direct data for (a), there are not for (b). The adoption of the faithful role would need to be supported by evidence that the subjects believed certain things about

the experiment, and these data are lacking.

The third subject role is the negativistic subject. These subjects are assumed to be motivated to disconfirm the experimenter's hypothesis by producing data that are of no use to the experimenter (Cook, Bean, Calder, Frey, Krovetz and Reisman, 1970). This subject role has also been referred to as the recalcitrant subject (Fillenbaum and Frey, 1970). According to Masling (1966), this subject is motivated by his anger at believing his behavior is being controlled by the experimenter. Masling termed the influence of the negativistic subject the "screw you" effect, and noted the similarity of this to Silverman's (1965) boomerang effect, where a subject reverses what he has been doing from perverseness or sheer bordom. It may be, as Agyris (1968) has noted, that this behavior is motivated by a subject's feelings of helplessness and frustration, which Agyris likened to the feelings of lower-level employees toward their supervisors.

The final subject role is the apprehensive subject, which is derived from Rosenberg's (1965, 1969) discussion of evaluation apprehension. According to Rosenberg, the typical subject approaches a psychological experiment with the preliminary expectation that the psychologist-experimenter may undertake to evaluate the subject's emotional adequacy and mental health. If the subject's suspicions are confirmed during the early stages of the experiment, or if the subject perceives that the suspicions have been confirmed, then he may experience evaluation apprehension. He has an active concern to win a positive evaluation, or at least not a negative evaluation, from the experimenter. Subjects are particularly prone to evaluation

apprehension because they presume that psychologists are especially qualified to diagnose underlying character traits or faults. Subjects will then shade their experimental behavior so as to put themselves in the best possible light. Confirming data for this role was noted by Page and Scheidt (1971) in their replication of Berkowitz and LePage's (1971) weapons effect. They found that the aware subjects who were experiencing evaluation apprehension did not cooperate, while the aware subjects not experiencing evaluation apprehension did cooperate. Overall, the weapons effect was obtained only with slightly sophisticated subjects who were aware of the purpose of the experiment. Although their results were described as evidence of the apprehensive subject role, their results do not seem strong enough to support their conclusion unreservedly. However, as reviewed by Weber and Cook (1972), other evidence does seem to support the existence of an apprehensive subject role.

Further investigation into these roles has been made by Sigall, Aronson and Van Hoose (1970). They predicted that cooperation per se (good subject role) would not be present if the subject's own purposes would be better served (apprehensive subject role) by not cooperating. After a practice trial, the subjects were assigned to one of four conditions in a telephone number copying task: a control condition, where output expectations were not specified; an increased-output condition, where subjects were given an increased output expectation; a decreased-output expectation; and a decreased-output obsessive-compulsive condition, where subjects were told that increased output reflected obsessive-compulsive tendencies. In two of the three

experimental conditions, the subject could cooperate (good subject role) and still benefit from his own needs to appear competent; however, in the decreased-output condition, for subjects to feel competent, they would need to not cooperate with experimental expectations. The experimental results supported the hypothesis of Sigall et al., namely that subjects will cooperate only so long as such cooperation enables them to "look good." In subject role terms, the good subject role was evident as long as the subject believed that cooperation resulted in self-satisfaction. When this contingency ceased, subjects became, in effect, apprehensive subjects and explicitly went against good subject role behavior in order to appear competent.

An additional test of the roles was done by Cook et al. (1970). They had experimentally naive subjects participate in either one of five group-administered attitude change experiments (short history) or in all five (long history). Half of the long history subjects experienced the experiments in one order, while the other half experienced them in the reverse order. The aim of the design was to vary the frequency of previous deceptions and debriefings, and to determine if subjects with longer experimental histories would adopt a good subject, faithful subject, or negativistic subject role. In their results, Cook et al. found that subjects with longer experimental histories considered the experiments to be less scientific and less valuable than the short history subjects. None of these opinions, however, affected their performance on the experiments. This result is consistent with a faithful subject role, where a subject does not act on the basis of suspicions. However, the long-history subjects also

reported caring less about understanding and following instructions, a result that is not congruent with a faithful subject conception.

A second experiment by Cook et al. (1970) examined how subjects would react if their suspicions about deception were aroused and the experimental hypotheses were obvious. Two immediately consecutive attitude change experiments were used, one purportedly on cognitive organization and the second supposedly on person perception. There were three deception conditions: subjects who had no deception, subjects who experienced deception, and subjects who knew about (had read about) deception. Subjects who knew of deception produced data that were in the opposite direction of the experimenter's hypothesis, which suggests a negativistic role adoption. Overall, the data in Cook et al.'s study suggested some support for a faithful subject role and stronger support for a negativistic subject role. However, there was not any systematic study of roles; rather, role adoption was inferred from behavior rather than from motivation.

In their discussion of subject roles, Weber and Cook (1972) noted several conceptual problems. First, inference of the roles from the dependent variables used is a vague process. Is a subject a "good" subject, for example, if he confirms the experimenter's hypothesis? On a poorly disguised attitude change study, a subject may change his attitude because he thinks that is what the experimenter wants (good subject role) or because he believes that this action will make him appear open-minded (apprehensive subject role). Second, there is the problem that the roles have not been tested in and of themselves. There needs to be the manipulation of antecedents in order to test role

adoption. Third, there is a problem in generalizing from experiments deliberately designed to test subject role adoption to experiments designed to test more general theories of behavior. Perhaps there is a qualitative difference between experiments that test artifact and those that study theoretical constructs. Finally, it is unclear whether subject roles are or can be explanatory concepts, or whether they are better viewed as summary descriptions of behavior.

Part of the problem with the concept of subject roles is that it is not well explicated. As Weber and Cook (1972) noted, a two-stage process is implied in which the first stage is the arousal to adopt a role, and the second stage is the perception of cues to guide experimental behavior to make it congruent with the aroused motive. The motivation to adopt a role may be aroused by factors that antecede an experiment (i.e., prior history, gossip, act of volunteering) or it may be more a function of the subject's personality. And even though cues for the role behavior are important, subjects can bias the results only to the extent they are aware of the demand characteristics of the experiment.

However, before the notion of subject roles is dismissed, there needs to be some attempt made to measure subjects' tendencies to role adoption. Does a subject adopt only a single role, one that is consistent with his personal needs, across all experiments? Or does a subject adopt several roles, depending on the demands of the experiment? Sigall et al. would indicate that the need to appear favorably (apprehensive subject) would surface over a need to confirm hypotheses (good role). Are there subject roles that are stronger than the others?

It may be that the notion of subject roles will prove useful in the long run of artifact research. For example, subject roles may be shown to have an interactive effect with other sources of bias (i.e., volunteering, prior history, deception and debriefing). Subject roles, whether explanatory concepts or summary descriptions, may prove to be an excellent quasi-control for the everpresent demand characteristics. Finally, a better understanding of the subjects' view of research participation will have two beneficial effects in the search for ethical treatment of subjects: subjects' attitudes and opinions will be more clearly expressed and more easily understood, and deception alternatives which involve active participation by subjects may be more easily identified.

# CHAPTER III

## METHOD

This research study was undertaken for two reasons. The first goal was to formulate an instrument with which to directly measure subjects' adoption of subject roles. Because subject effects are a potential source of bias in experiments their presence needs to be identified and controlled. However, indirect inference of subject effects generally, and role adoption specifically, from dependent variables is not sufficiently rigorous to allow for a strong test of their presence. The second goal was to classify subjects by their subject roles. A determination of any behavioral differences attributable to the subjects' roles could then be specified in a test experiment on dyadic conformity.

This research was undertaken to provide initial data on the validity and reliability of the Subject Role Measure, which is the instrument designed to measure subjects' tendencies to role adoption by assessing their opinions and attitudes on research participation. The measurement of construct validity (Anastasi, 1976) involves establishing the extent to which a test can be said to measure a theoretical construct or a trait. Since broad behavioral descriptions are used, construct validation requires the gradual accumulation of information from a variety of sources. In this study, the Subject Role Measure

was investigated in order to determine the extent to which the instrument measures subjects' role adoption during participation in psychological research. During Part I, the Subject Role Measure was designed, tested, and re-designed in order accurately to assess and differentiate subject roles. The instrument was compared among three samples of subjects: two samples of role-playing subjects and one sample of non-role-playing subjects. For Part II, the Subject Role Measure was used to classify a fourth sample of subjects. These classified subjects then participated in a controlled test experiment (cf. Willis and Willis, 1972), wherein behavioral differences due to role adoption could be specified.

Subjects

Four separate samples of undergraduate students enrolled in the introductory psychology course at The Ohio State University were used in this study: the first sample, obtained during fall quarter, 1976, consisted of 91 male and female subjects; the second sample, used during winter quarter, 1977, was made up of 76 male and female subjects; the third sample also was obtained during winter quarter, 1977, and consisted of 190 male and female students; and the fourth sample, obtained during spring quarter, 1977, consisted of 60 male and female undergraduates. All subjects participated in the experiment for course credit and were solicited by sign-up sheets posted on the bulletin boards where subjects normally select experiments. The title of the experiment was listed as "Surveying Opinions About Research Participation."

Experimenters

Three undergraduate psychology majors, two male and one female, were recruited from an upper division psychology course to serve as experimenters for the test experiment on dyadic conformity. They received independent study credit for their participation.

Part I, Instrument Construction

Item generation. Sixty items, approximately 15 for each of the four subject roles (Good, Faithful, Negativistic, Apprehensive) enumerated by Weber and Cook (1973), were constructed by the author. Following Edwards (1957) and Likert (1975), items were constructed according to the following criteria: items were expressions of desired behaviors, not statements of fact; items were worded in straightforward and concise style; items were worded so that the modal reaction, judged by the author, would be in the middle; and items were counterbalanced as to being positively or negatively reflecting of characteristics judged possessed by subjects adopting a particular role. (See Appendix A for original 60 items.)

Items were responded to by the subjects on a five-point Likert scale, with the scale anchorings being Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (1). (See Appendix B for instructions to subjects concerning filling out the instrument.)

Item analysis. The original 60 items were presented to the first sample of subjects (N =91). These subjects received instructions (see Appendix C) to fill out the instrument "while role-playing a certain kind of person." Approximately 25 subjects role-played each subject role described by Weber and Cook (1973): Good subject, Faithful

subject, Negativistic subject, and Apprehensive subject. Subjects' responses to the original 60 items were item analyzed and factor analyzed. A second sample of role-playing subjects (N = 76) again filled out the questionnaire under role-playing instructions. Their responses were analyzed by item consistency and also by factor structure. In addition, the responses of the first and second samples were used for cross-validation analyses.

The third sample of subjects (N = 190) filled out the Subject Role Measure with instructions to report their own personal opinions about each item. The responses of the non-role-playing subjects were compared to the two groups of role-playing subjects, again with factor analyses and item analyses as well as cross-validation analyses.

Using the data obtained from the responses of the three groups of subjects and the statistical analyses of these responses, a final form of the instrument was designed (see Appendix D). The instrument was composed of 36 items, 12 on each of the following scales: Cooperative subject, Uncooperative subject, and Obligated subject. (These scales were based on the factor analyses of subjects' responses; see Chapter 4 for more detail). In addition, 9 items were added at the end of the instrument; these items were not used in the subject's classification according to scale scores, but rather had the function of eliminating the random responses that had been found during initial testing with the instrument to occur with the last few items.

Subjects again responded to the items with a 5-point Likert scale of (5) Strongly Agree, (4) Agree, (3) Neutral, (2) Disagree, and (1) Strongly Disagree.

Part II, Test Experiment

Procedural overview. Subjects were recruited for an experiment entitled "Surveying Attitudes Toward Research." Prior to their participation in the experiment, subjects received written information (see Appendix E) about the two-part nature of the experiment. Subjects who consented to the experiment were asked to complete the Subject Role Measure. This testing took approximately 20 minutes, with no subject needing over 30 minutes to complete the Subject Role Measure.

After completing the instrument, subjects were advised that they would be scheduled for the second part of the experiment by the experimenter. They were asked to indicate any evenings they would be unavailable on the face sheet of the instrument.

After the Subject Role Measure had been scored, subjects were classified into four groups: Cooperative subjects (N = 36), Uncooperative subjects (N = 9), and Obligated subjects (N = 11); in addition, there were 4 subjects who were unclassifiable. Subject classificaton was made according to decision rules based on means and standard deviations of scale scores obtained from the third sample of 190 subjects. It was intended that a "2 standard deviation" rule apply to classification; that is, that a subject would need to score at least 2 standard deviations above the mean in a particular scale and below the mean on each of the other scales. However, due to the paucity of subjects, a less-rigorous "1 standard deviation" rule was adopted, and occasional exceptions made to the requirement that below-the-mean scores be needed on the other two scales. (See chapter 4 for additional detail.)

For the second part of the experiment, the classified subjects participated in a dyadic conformity test experiment that was a partial replication of Willis and Willis (1970). In addition, subjects completed the Subject Role Measure a second time in order to provide data for test-retest reliability determination. Unclassified subjects also participated in the test experiment, although their responses were not used for the analysis of behavioral differences due to roles. The unclassified subjects also completed the Subject Role Measure a second time.

Subjects reported for the second part of the experiment in pairs. They were met by Experimenter 1, who asked them to fill out a pre-test purported to relate to the test experiment. Because the experiment involved judging photographs, subjects were asked to complete an inventory (see Appendix F) of their previous experiences with various forms of art. After completing the forms, Experimenter 1 directed them to another room, where Experimenter 2 administered the test experiment. They were then directed to a third room, where the author gave them the Subject Role Measure to complete.

The author then debriefed the subjects according to the guidelines of Golding and Lichenstein (1973): subjects were asked to share any suspicions they might have had about the study in a manner designed to reassure subjects that it was acceptable to have suspicions; approximately 25% of the subjects, after a few questions based on their initial comments, admitted suspicions that the purpose of the study was to discover whether they would change their behaviors so as to conform to the partner. After dealing with subject suspicions, the author then

debriefed the subjects concerning the intent of the Subject Role Measure and the purpose of the test experiment.

Stimuli. Stimuli were two identical sets of ten photographs each. The photographs were black and white prints approximately 14 by 20 mm individually mounted on white medium-weight poster board measuring 25 by 25 mm. The photographs were chosen by the author and a staff photographer for the campus newspaper. The criterion for selection was that each photograph be similar to the others, judged subjectively by the author and the photographer, and that the subject of each photograph be non-persons (landscape, trees, city scenes and so on) to avoid possible sources of bias in the ranking task.

Intake instructions. Subjects were read the following instructions by Experimenter 1.

> This is an experiment involving aesthetic judgment. What I mean by aesthetic judgment is looking at photographs and rating them on the presence or absence of artistic qualities. In this experiment, you will be asked to rate ten photographs according to your opinion of their artistic excellence. In order for your ratings to be accurately evaluated, it will be helpful for us to know how much experience you have had with different art forms. Therefore, I would like you to fill out this art inventory.

Subjects were directed to a table and a desk and were provided with the inventory and a pencil.

Experimental instructions. Subjects were read the following instructions by Experimenter 2.

On the table in front of you is a set of ten photographs. I would like you to rank order them according to their artistic excellence as you perceive it. You should pay attention to how well the photograph is composed, how the subject matter is related to the photographic style, and how the photographer uses the elements of light and shadow, and space and detail. Do you have any questions about ranking these photographs? (pause)

After you have rank ordered the photographs, I will compare your rankings with those done by senior art students during a pilot study. That way, you can have an idea of how well you have rated the photographs. I will give you a sheet of paper on which to rank these photographs. You will notice that number 1 is the highest ranking and number 10 is the lowest ranking. You have five minutes to rank these 10 photographs. Do you have any questions?

After the subjects completed the initial rating, Experimenter 2 took their answer sheets. S/He then gave the subjects a single photograph that was similar in form to the stimulus photographs but that was an abstract scene. The subjects then received the following instructions.

While I am comparing your rankings to those of art students, I would like you to judge another photograph. I would like you to write a short paragraph about this photograph. Your personal reactions are what is important for this judgment. So you should consider what you think the photographer wanted you to think and feel when you looked at his

photograph. Do you have any questions?

This task served as a "filler task" while Experimenter 2 was working with the subjects' answer sheets. The experimenter pretended to copy onto each subject's answer sheet the partner's ranking. Actually, the experimenter transformed the subject's initial ranking into a ranking that correlated zero with the subject's initial ranking using a predetermined pair of two rankings with a zero correlation.

Experimenter 2 returned the subjects' rating sheets to the subjects, collected the abstract photographs and the subjects' impression paragraph, and read the subjects the following instructions.

> On your rating sheet, you will see that I have copied down your partner's ranking. In addition, I have given you and your partner a score. These scores were obtained by comparing yours and your partner's rankings to those done by the senior art students for a pilot study of this experiment. The scores range from 0 to 100; your score can tell you how well your rankings correspond to those of the art students. I would like you to rerank the ten photographs now. You have received the additional information of how well you and your partner ranked the photographs compared to the art students and your partner's rankings so that you can improve your score after the second ranking. You have 10 minutes for the second ranking of the photographs.

Manipulation of perceived task competency. There were two levels of perceived task competency: Partner Superior, where the subject perceived the partner as having more ability on the ranking test, and

Subject Superior, where the subject perceived the partner as having less ability than the subject. These levels were manipulated by means of false feedback scores to the subjects following their first rating. In the Subject Superior level, the subject was told he or she scored 80 on the 0 to 100 scale while the partner was said to have scored 50. For the Partner Superior level, the same numbers were used so that the subject believed his score was 50 and the partner's, 80.

Scoring. The dependent variables for each subject were two net conformity scores. Following Willis and Willis (1970), a Spearman rank-order correlation coefficient was computed between the presumed partner ranking and the subject's second ranking. These coefficients were then transformed into a net conformity score by the equation "net conformity = (90 - arccos rho) / 90," where rho is the rank order correlation coefficient and arccos rho was measured in degrees. In addition, an arcsin transformation, as a replication, was performed on the rank order correlation coefficients.

## Hypotheses

The data obtained from the test experiment can only be regarded as suggestive. This cautionary approach is mandated because the subjects were classified according to a liberal decision rule, and participated in only one test experiment. However, the hypotheses for the test experiment involved mean differences in net conformity. It was hypothesized that significant differences in net conformity would exist between role groups. In addition, it was hypothesized that the Partner Superior subjects would manifest more conformity than the Subject Superior subjects, a finding of Willis and Willis (1970) and replicated

by Wahl (1972).

Analysis

The data from the test experiment were analyzed by an unweighted means analysis of variance. This statistical method was chosen because of the differences in subject group size. In addition, an effects indicator index was computed for certain marginal effects.

# CHAPTER IV

# RESULTS

The results from this study need to be considered in two parts. The first part involved the data obtained from the three samples of subjects who completed the Subject Role Measure. These data included the results from the item and factor analyses for each sample considered separately, and for the total sample. In addition, cross-sample validation statistics and between-sample comparisons were considered. The second part included the data from the fourth sample of subjects who were classified by their scores on the Subject Role Measure and who then participated in the test experiment on dyadic conformity.

## PART 1

### Role-Playing Subjects (First Sample)

The items forming the Subject Role Measure were classified by the author into four scales: Good, Faithful, Negativistic, and Apprehensive subjects. There were approximately 15 items on each scale; the total number of items was 60. The first sample of subjects completed the Subject Role Measure under role-playing conditions; this method was used to simulate a sample of "pure" subject role types. The item analysis yielded response distributions for each item across subject role groups, and means and standard deviations of responses for each item

and across groups. As can be seen in Table 1, which presents scale means and standard deviations for each subject role group, the Good scale differentiated somewhat the Good subjects (more specifically, the subjects role-playing Good subjects); the other three scales showed similarly encouraging results of the highest response mean being for the appropriate subject role group. However, the mean differences, considering the standard deviations, were not large enough to permit confidence in the scale construction as it stood on the original form.

Table 1

Scale Means and Standard Deviations

First Role-Playing Sample, Original Form

| | | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|---|
| Good scale | $\bar{X}$ | 55.000 | 46.826 | 43.850 | 52.909 |
| | SD | 7.400 | 6.384 | 6.520 | 7.248 |
| Faithful scale | $\bar{X}$ | 56.130 | 57.748 | 39.150 | 53.864 |
| | SD | 6.601 | 3.966 | 7.765 | 4.948 |
| Negativistic scale | $\bar{X}$ | 35.000 | 32.870 | 53.150 | 35.045 |
| | SD | 4.034 | 5.736 | 4.778 | 5.881 |
| Apprehensive scale | $\bar{X}$ | 49.091 | 47.036 | 39.150 | 52.636 |
| | SD | 5.838 | 4.877 | 5.633 | 5.866 |

The scale intercorrelations (see Table 2) provided additional data concerning each scale's ability to distinguish role group. The Good scale showed high intercorrelations with other scales, including high positive correlations with the Negativistic scale. These correlations, for the Faithful and Apprehensive subjects, are invalidity

indicators because the Negativistic scale is theoretically the polar opposite of the Good scale. The Faithful scale, however, was moderately correlated with the other scale. Similar moderate or zero correlations can be seen for the Negativistic and Apprehensive scales. It should be noted that there were occasionally high correlations between two scales for only one subject role group (cf. Good scale and Faithful scale intercorrelations for Negativistic subjects); however, in all cases these unusually high correlations were shown by subjects not measured directly by either scale involved.

Table 2

Inter-Scale Correlations

First Role-Playing Sample, Original Form

| | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|
| Good scale | | -.074 G | -.093 G | .436 G |
| | | -.086 F | .670 F | .490 F |
| | | .579 N | -.010 N | .123 N |
| | | -.244 A | .502 A | .536 A |
| Faithful scale | | | -.070 G | -.260 G |
| | | | -.120 F | .226 F |
| | | | -.401 N | .253 N |
| | | | -.621 A | -.039 A |
| Negativistic scale | | | | .284 G |
| | | | | .266 F |
| | | | | .241 N |
| | | | | .373 A |
| Apprehensive scale | | | | |

Note: G = Good subjects, F = Faithful subjects, N = Negativistic subjects, A = Apprehensive subjects.

At this point, each item was considered individually. The response distribution for each item was examined, the assignment of item to subject role scale was noted, and any reverse keying necessary in order to weigh positively negatively skewed distributions in the overall score was accomplished. In some cases, the items were re-assigned to the scales whose subjects it differentiated. In total, 42 items were selected as being useful items to distinguish subject role groups from each other; the remaining 18 items were discarded because of their lack of discrimination power.

A final item analysis was completed on these 42 items. Table 3 presents the means and standard deviations both individually by item and across subject role groups. As can be seen in this table, the Good scale became considerably smaller while the other three scales increased in size. For each scale, again, the response means were highest for those subjects in the appropriate subject role group. The Negativistic scale contained the most items, with 17; the Good scale, 4; the Faithful scale, 11; and the Apprehensive scale, 10.

The inter-scale correlations for the derived form are presented in Table 4. Uniformly negative or zero correlations were found for each inter-scale comparison with the exception of the correlations between the Good and the Apprehensive scales for all subject role groups. It appeared that the Good and the Apprehensive scales might be measuring similar concepts although their correlation was moderate. Of additional interest are the Kuder-Richardson number 8 formula reliabilities for both the original and derived forms of the Subject Role Measure which are presented in Table 5. Overall, the reliabilities increased

Table 3

Scale Means and Standard Deviations

First Role-Playing Sample, Derived Form

| | Item No. | Good subjects | | Faithful subjects | | Negativistic subjects | | Apprehensive subjects | |
|---|---|---|---|---|---|---|---|---|---|
| Good scale | 2 | 3.50 | 1.67 | 2.65 | 1.31 | 4.10 | 0.89 | 3.41 | 1.30 |
| | 4 | 4.14 | 1.22 | 3.61 | 1.47 | 1.90 | 1.04 | 4.14 | 1.01 |
| | 39 | 4.55 | 0.58 | 3.91 | 1.02 | 2.00 | 1.30 | 4.23 | 0.73 |
| | 56 | 4.09 | 0.73 | 3.61 | 1.01 | 3.00 | 1.30 | 3.32 | 1.14 |
| | overall | 16.273 | 3.092 | 13.783 | 2.718 | 11.00 | 2.049 | 15.091 | 2.087 |
| Faithful scale | 9 | 3.27 | 1.39 | 4.30 | 0.62 | 3.50 | 1.24 | 2.73 | 1.54 |
| | 10 | 3.00 | 1.54 | 3.65 | 0.96 | 2.55 | 1.12 | 2.91 | 1.24 |
| | 19 | 2.36 | 1.43 | 4.04 | 1.12 | 3.50 | 1.47 | 2.86 | 1.22 |
| | 21 | 3.23 | 1.20 | 3.48 | 1.14 | 2.55 | 1.36 | 3.23 | 1.00 |
| | 25 | 2.55 | 1.34 | 3.83 | 1.01 | 3.15 | 1.42 | 2.82 | 1.19 |
| | 31 | 3.91 | 1.24 | 3.96 | 0.75 | 2.00 | 1.14 | 3.86 | 0.97 |
| | 32 | 2.95 | 1.40 | 3.26 | 1.15 | 3.05 | 1.16 | 3.05 | 1.02 |
| | 34 | 3.05 | 1.22 | 3.52 | 0.88 | 3.25 | 1.44 | 2.68 | 1.33 |
| | 35 | 2.64 | 1.33 | 3.65 | 1.24 | 4.00 | 1.10 | 2.91 | 1.31 |
| | 46 | 3.77 | 1.28 | 4.57 | 0.65 | 1.95 | 1.07 | 3.41 | 1.19 |
| | 50 | 2.59 | 1.50 | 3.87 | 1.03 | 3.10 | 1.30 | 2.59 | 1.07 |
| | overall | 33.318 | 9.059 | 42.139 | 4.848 | 32.600 | 4.477 | 33.045 | 7.419 |
| Negativistic scale | 1 | 1.18 | 0.39 | 1.43 | 0.77 | 4.10 | 1.04 | 1.09 | 0.42 |
| | 5 | 2.05 | 1.22 | 1.87 | 1.12 | 3.90 | 1.30 | 2.32 | 1.10 |
| | 6 | 2.41 | 1.15 | 1.91 | 0.88 | 4.00 | 1.14 | 2.18 | 0.98 |
| | 11 | 1.45 | 0.58 | 1.70 | 1.04 | 3.90 | 1.18 | 1.68 | 0.70 |
| | 13 | 1.18 | 0.39 | 1.52 | 0.50 | 4.10 | 0.83 | 1.55 | 0.72 |

Table 3 Continued

| | Item No. | Good subjects | | Faithful subjects | | Negativistic subjects | | Apprehensive subjects | |
|---|---|---|---|---|---|---|---|---|---|
| Negativistic scale | 14 | 1.86 | 1.18 | 2.70 | 1.23 | 4.45 | 0.80 | 1.82 | 0.65 |
| | 15 | 2.32 | 1.18 | 1.65 | 0.70 | 4.40 | 0.73 | 2.50 | 1.44 |
| | 17 | 1.95 | 1.22 | 1.57 | 0.77 | 4.20 | 0.87 | 2.05 | 1.11 |
| | 18 | 1.59 | 0.72 | 1.22 | 0.41 | 4.45 | 0.92 | 1.45 | 0.58 |
| | 20 | 3.32 | 1.26 | 2.35 | 0.91 | 3.75 | 0.99 | 2.95 | 1.26 |
| | 22 | 1.86 | 0.92 | 2.13 | 1.03 | 4.25 | 1.04 | 2.23 | 0.90 |
| | 26 | 3.05 | 1.11 | 2.96 | 1.08 | 4.30 | 0.84 | 2.41 | 0.98 |
| | 29 | 1.86 | 0.81 | 1.87 | 1.03 | 3.80 | 1.29 | 2.55 | 1.20 |
| | 37 | 2.59 | 1.37 | 3.13 | 1.15 | 4.05 | 1.16 | 2.55 | 1.03 |
| | 42 | 2.41 | 0.78 | 2.74 | 1.03 | 2.05 | 0.97 | 2.36 | 0.83 |
| | 45 | 1.68 | 0.55 | 1.78 | 0.78 | 4.15 | 1.11 | 1.77 | 0.60 |
| | 51 | 1.82 | 0.78 | 1.91 | 0.72 | 3.95 | 1.12 | 2.27 | 0.86 |
| | overall | 34.591 | 5.114 | 43.435 | 6.198 | 67.800 | 6.063 | 35.727 | 6.628 |
| Apprehensive scale | 7 | 3.14 | 1.42 | 2.91 | 1.18 | 2.20 | 1.17 | 3.59 | 1.23 |
| | 12 | 3.45 | 1.16 | 2.83 | 0.96 | 2.00 | 1.14 | 3.64 | 1.02 |
| | 16 | 2.50 | 1.08 | 2.87 | 0.95 | 2.25 | 1.34 | 3.64 | 1.23 |
| | 27 | 3.18 | 1.27 | 3.43 | 1.06 | 3.75 | 1.13 | 2.18 | 1.34 |
| | 28 | 3.59 | 1.23 | 2.96 | 1.20 | 1.65 | 1.06 | 3.86 | 0.92 |
| | 30 | 2.95 | 1.02 | 2.35 | 1.20 | 2.30 | 1.14 | 3.77 | 1.04 |
| | 33 | 3.05 | 1.22 | 3.26 | 1.11 | 2.50 | 1.20 | 4.26 | 0.71 |
| | 36 | 3.41 | 1.23 | 3.04 | 1.12 | 2.60 | 1.02 | 3.82 | 0.98 |
| | 40 | 3.32 | 1.06 | 2.83 | 1.09 | 2.20 | 1.03 | 4.18 | 0.49 |
| | 48 | 3.00 | 0.95 | 3.22 | 0.93 | 2.25 | 1.13 | 4.09 | 0.73 |
| | overall | 31.591 | 5.365 | 29.696 | 4.398 | 23.700 | 5.178 | 37.136 | 3.969 |

Table 4

Inter-Scale Correlations

First Role-Playing Sample, Derived Form

| | Good scale | Faithful scale | Negativistic scale | Apprehensive scale |
|---|---|---|---|---|
| Good scale | | -.414 G<br>-.374 F<br>-.065 N<br>-.376 A | -.298 G<br>-.054 F<br>-.217 N<br>-.179 A | .229 G<br>.300 F<br>.269 N<br>.399 A |
| Faithful scale | | | .018 G<br>-.599 F<br>.091 N<br>-.506 A | -.432 G<br>-.483 F<br>-.137 N<br>-.462 A |
| Negativistic scale | | | | -.094 G<br>.050 F<br>-.308 N<br>-.099 A |
| Apprehensive scale | | | | |

Note: G = Good subjects, F = Faithful subjects, N = Negativistic subjects, A = Apprehensive subjects.

Table 5

Kuder-Richardson No. 8 Reliabilities

Original and Derived Forms

First Role-Playing Sample

| | | Good scale | Faithful scale | Negativistic scale | Apprehensive scale |
|---|---|---|---|---|---|
| Good subjects | T1 | .745 | .744 | .357 | .618 |
| | T2 | .874 | .865 | .554 | .711 |
| Faithful subjects | T1 | .715 | .528 | .731 | .541 |
| | T2 | .641 | .718 | .735 | .600 |
| Negativistic subjects | T1 | .637 | .785 | .456 | .568 |
| | T2 | .429 | .499 | .642 | .712 |
| Apprehensive subjects | T1 | .771 | .636 | .761 | .642 |
| | T2 | .492 | .844 | .764 | .604 |

Note: T1 = Original form, T2 = Derived form.

on the derived form; the exceptions were the Good scale, where the reliabilities increased for only the Good subjects, but decreased for the other subject role groups, and the Apprehensive scale.

In order to determine the factor structure of the Subject Role Measure, several factor analyses were completed on the data. Using communality estimates which consisted of the square of the multiple correlation of each item with the other items in a principal components program, the following factor structure was found. Factor 1 had a variance of 16.5335, a percent variance of 32.8118, and a cumulative variance of 32.8118. Factor 2 had a variance of 7.9122, a percent variance of 15.7023, and a cumulative percent variance of 48.5142. Using Humphrey and Montanelli's (1976) parallel analysis for determining

number of factors, the critical value of the third random root (N = 87, number of items = 60) was 2.045. This value was not exceeded by the variance of the third factor, 2.3812; therefore it was determined that there were only two significant factors.

An initial test factoring with an orthogonally rotated factor matrix yielded the factor structure presented in Table 6. A loading exceeding .500 was chosen as the dividing point between those items considered to be significantly loading on a particular factor and those items discarded. The value of .500, although conservative, seemed justified in light of the small sample size and limited number of items.

Those items loading higher than .500 on either Factor 1 or Factor 2 were selected for further examination. In Table 7, each item's meaning stem is presented for comparison. It was obvious that Factor 1, negative loadings, corresponded quite closely to Weber and Cook's (1973) description of the Negativistic subject role: a subject who resents participating in research (#6, 29), who does not believe in cooperating with the experimenters (#11, 47, 51), and who endorses to some degree the "messing up" of experiments (#14, 18). There was also a clear parallel with what Agyris (1968) discussed as the employer-employee authoritarian response dimension (#15, 26, 49, 53, 58). In addition, the positive loadings of Factor 2 corresponded closely to the description of an Apprehensive subject role: a subject who needs to know the real reason for the study (#8, 25), who is nervous about being evaluated by the experimenter (#12, 30, 36, 40, 52) and who will give the experimenter those behaviors the subject believes are wanted (#19, 43, 35, 50, 60).

Table 6

Orthogonally Rotated Factor Matrix

First Role-Playing Sample

| Item No. | Factor 1 | Factor 2 |
|---|---|---|
| 1 | 0.773 | 0.337 |
| 2 | -0.439 | 0.346 |
| 3 | 0.211 | 0.167 |
| 4 | 0.465 | 0.445 |
| 5 | 0.587 | 0.056 |
| 6 | -0.695 | 0.083 |
| 7 | -0.315 | -0.115 |
| 8 | -0.422 | 0.516 |
| 9 | 0.137 | -0.651 |
| 10 | 0.347 | -0.261 |
| 11 | -0.674 | -0.188 |
| 12 | 0.322 | 0.545 |
| 13 | 0.766 | 0.281 |
| 14 | -0.539 | -0.410 |
| 15 | -0.728 | 0.137 |
| 16 | 0.286 | 0.329 |
| 17 | 0.753 | 0.021 |
| 18 | -0.887 | -0.146 |
| 19 | -0.059 | 0.701 |
| 20 | -0.400 | 0.219 |
| 21 | 0.466 | -0.024 |
| 22 | 0.694 | 0.302 |
| 23 | 0.011 | 0.426 |
| 24 | 0.695 | 0.030 |
| 25 | -0.151 | 0.568 |
| 26 | -0.560 | -0.284 |
| 27 | -0.169 | -0.475 |
| 28 | -0.386 | -0.607 |
| 29 | -0.691 | 0.149 |
| 30 | -0.020 | 0.589 |
| 31 | 0.653 | 0.228 |
| 32 | -0.143 | 0.353 |
| 33 | 0.295 | 0.466 |
| 34 | -0.036 | 0.639 |
| 35 | 0.088 | 0.827 |
| 36 | 0.085 | 0.637 |
| 37 | -0.363 | -0.537 |
| 38 | -0.267 | -0.421 |
| 39 | 0.706 | 0.437 |
| 40 | 0.368 | 0.585 |
| 41 | 0.815 | 0.194 |
| 42 | -0.298 | 0.149 |

Table 6 Continued

| Item No. | Factor 1 | Factor 2 |
|---|---|---|
| 43 | 0.740 | -0.077 |
| 44 | 0.572 | -0.075 |
| 45 | 0.842 | 0.324 |
| 46 | 0.805 | -0.199 |
| 47 | -0.632 | -0.205 |
| 48 | 0.436 | 0.275 |
| 49 | -0.507 | 0.028 |
| 50 | -0.256 | 0.572 |
| 51 | -0.711 | -0.224 |
| 52 | 0.206 | 0.776 |
| 53 | -0.605 | 0.079 |
| 54 | 0.209 | -0.156 |
| 55 | -0.114 | 0.388 |
| 56 | 0.225 | 0.010 |
| 57 | 0.539 | -0.229 |
| 58 | -0.515 | -0.070 |
| 59 | 0.608 | 0.394 |
| 60 | 0.101 | 0.618 |

It was interesting, however, that for both Factor 1, positive loadings, and Factor 2, positive loadings, there was a mixture of items as compared to Factor 1, negative loadings. In regarding Factor 1, positive loadings, there was a subject described who corresponded to neither the Good subject role nor the Faithful subject role, but rather to both in some degree. It appeared that the Good subject items "split up," with those items pertaining to needing to cooperate, to be rated favorably, and to finding out reasons behind the experiment loaded high on Factor 2, while those items reflecting a sincere desire to help the cause of science, an inclination to follow instructions closely and to be involved and interested, and a general orientation to being more honest in the experiment appeared on Factor 1 loadings.

Table 7

Meaning Stems for Factor Loadings

Factor 1

| Item No. | Meaning stem | Original scale assignment |
|---|---|---|
| **Positive Loadings** | | |
| 1 | follow instructions carefully | F |
| 5 | avoid acting on suspicions | F |
| 13 | pay close attention | G |
| 17 | give honest and accurate representation of self | F |
| 22 | should be involved and interested | G |
| 24 | no reason to resent participation | A |
| 31 | participate to help E learn more about people | F |
| 39 | important to work hard to be a good subject | F |
| 41 | participate to help the cause of science | G |
| 43 | try not to be influenced by things heard | F |
| 44 | be very assertive | F |
| 45 | be cooperative | G |
| 46 | give accurate representation of everyday behavior | F |
| 57 | behave way usually do | F |
| 59 | follow instructions | G |
| **Negative Loadings** | | |
| 6 | have had discomfort because cooperated | N |
| 11 | should be independent and not cooperate | N |
| 14 | don't give E results he wants | N |
| 15 | lose rights as a subject | N |

Table 7 Continued

| Item No. | Meaning stem | Original scale assignment |
|---|---|---|
| 18 | okay to mess up results since didn't choose to be there | N |
| 26 | no need to be involved or really interested | N |
| 29 | should be angry as subject because get taken advantage of | N |
| 47 | could choose to go against instructions | N |
| 49 | be person subject wants to be, not controlled by E | N |
| 51 | be uninvolved and apathetic | N |
| 53 | have no status as a subject | N |
| 58 | don't be too active a subject | F,- |
| | Factor 2 | |
| Positive Loading | | |
| 8 | important to know real reason for experiment so can choose how to behave | N |
| 12 | good E knows about people, can tell about subject | A |
| 19 | give E what he wants to see | G |
| 25 | if know the real reason for experiment, pretend don't know | G,- |
| 30 | should be nervous as subject because never know what E is thinking | A |
| 34 | subjects' behavior controlled by E | A |
| 35 | should act the way E wants subject to | G |
| 36 | if cooperative, rated more favorably by E | A |
| 40 | E can tell how well-adjusted subject is | A |
| 50 | should figure out what E wants | A |
| 52 | important to present self favorably because E is expert | A |

Table 7 Continued

| Item No. | Meaning stem | Original scale assignment |
|---|---|---|
| 60 | give E what he wants if subject figures that out | G |
| Negative Loading | | |
| 9 | don't worry about how E thinks of subject | A,- |
| 28 | okay to give E response that is of no use | N |
| 37 | don't need to bend over backwards to please E | G,- |

Factor 1 was named the Cooperative factor. A positively cooperative role was indicated for the Good and Faithful items (positive loadings), and a negative uncooperative role for the Negativistic items (negative loadings). The positive loadings indicated the following subject role type: a subject who follows instructions carefully and conscientiously (#13, 39, 59), who is both honest and accurate in presenting himself in the experiment (#5, 17, 43, 46, 57), and who works hard in an experiment for altruistic reasons (#22, 24, 31, 41).

The second factor, upon comparison with Factor 1 and re-examination of Weber and Cook's (1973) discussion, was named the Obligation factor. This title was intended to convey both the Apprehensive subject's fear of evaluation and therefore positive self-representation and cooperation, and the Good subject's problem-solving orientation toward finding experimental cues to guide behavior.

A varimax factor analysis was completed on the subjects' factor scores obtained from the orthogonal factor matrix of the original factor analysis. The minimal correlation between all possible factor

score sets ranged between .96534 and .98400. It was decided, on the basis of this comparison, that considerable confidence could be placed in the determination of the factor scores.

A classification analysis program was therefore completed in order to determine the amount of dispersion of subject's factor scores from factor structure. Each subject was classified into one of the four subject role groups from the probability associated with the chi square statistic from the dispersion matrix. The distribution of subject assignment is presented in Table 8. It was obvious that the Faithful and Negativistic subjects were most effectively classified; there was considerably more variability in the classification of the Good and the Apprehensive role subjects. This factor score assignment was compared with that of raw score group assignment, presented in Table 9. As was evident, the factor score assignment was less accurate in classifying subjects than the raw score assignments. However, the factor structure contained a great deal of error variance, with the two significant factors accounting for only 48% of the total variance, so this slippage was expected.

Overall, the data results for the first sample of subjects indicated that the items used in the Subject Role Measure did tap subjects' conception of role-related behavior. It should be noted that the factor analyses indicated the structure to be different from the four subject roles considered by the author when designing the instrument. The factor analyses indicated two factors, one bipolar factor termed the Cooperation factor, and one unipolar factor termed the Obligation factor. In addition, the item analyses, to a considerable degree,

Table 8

Subject Classification by Factor Scores

First Role-Playing Sample

| | Good group | Faithful group | Negativistic group | Apprehensive group |
|---|---|---|---|---|
| Good subject | 4 8 18 20 | 1 5 9 10 11 12 13 16 22 | | 2 3 6 7 14 15 17 19 21 |
| Faithful subject | 27 44 | 23 24 26 29 30 31 32 34 35 36 37 38 40 42 43 45 | | 25 28 33 41 |
| Negativistic subject | | 48 | 46 47 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 | |
| Apprehensive subject | 66 68 70 84 | 71 75 79 80 | | 67 69 72 73 74 76 77 78 81 82 83 85 86 87 |

Note: Numbers refer to subjects.

Table 9

Subject Classification by Raw Scores

First Role-Playing Sample

| | Good group | Faithful group | Negativistic group | Apprehensive group |
|---|---|---|---|---|
| Good subject | 2 3 4 6 13 14 15 19 20 21 | 1 5 9 10 11 12 16 22 | | 7 8 17 18 |
| Faithful subject | 25 28 41 | 23 24 26 27 29 30 32 34 35 36 37 38 39 40 42 43 44 45 | | 31 33 |
| Negativistic subject | | | 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 | |
| Apprehensive subject | | 66 79 80 | | 67 68 69 70 71 72 73 74 75 76 77 78 81 82 83 84 85 86 87 |

Note: Numbers each refer to subject.

supported the factor analysis structure: the Faithful, Negativistic, and Apprehensive scales, all of which reflected factors, differentiated the subject role groups fairly successfully. The Good scale, however, did not differentiate the Good subjects from the Apprehensive subjects, a result expected from the lack of a Good subject factor. The results of the first sample, then, gave support to the possibility of measuring subject role differences and also indicated a new typology of subject roles.

Role-Playing Subjects (Second Sample)

The data from the second sample of subjects were analyzed in a similar manner to the first sample: item analyses were completed on the subjects' responses to the Subject Role Measure; items were then reverse keyed and/or reassigned on the basis of the means and standard deviations for each item across all four subject role groups. When the item assignments were determined, factor analyses involving both orthogonal and oblique rotations were completed on subjects' responses. Then comparisons between the data of the first sample and of the second sample were made.

Table 10 presents the means and standard deviations across subject role groups for the second sample of role-playing subjects completing the Subject Role Measure, using the original item to scale assignment (cf. Table 1 for first sample). It was obvious that a similar pattern to the first sample was emerging in that the Good scale was not distinguishing role groups at all, while the Negativistic scale was a more effective discriminator. The Faithful scale also did not show much differentiation, and the Good and Apprehensive subjects scored high on

Table 10

Scale Means and Standard Deviations

Second Role-Playing Sample, Original Form

| | | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|---|
| Good scale | $\bar{X}$ | 44.940 | 47.050 | 50.350 | 47.000 |
| | SD | 5.462 | 3.838 | 5.659 | 6.030 |
| Faithful scale | $\bar{X}$ | 47.389 | 48.600 | 43.100 | 46.409 |
| | SD | 3.684 | 4.055 | 4.857 | 4.589 |
| Negativistic scale | $\bar{X}$ | 36.000 | 36.850 | 46.650 | 39.545 |
| | SD | 6.137 | 6.159 | 9.366 | 8.489 |
| Apprehensive scale | $\bar{X}$ | 47.222 | 43.550 | 38.550 | 49.182 |
| | SD | 5.865 | 5.895 | 7.533 | 8.983 |

the Apprehensive scale. The inter-scale correlations are presented in Table 11 (cf. Table 2 for first sample). These inter-scale correlations have considerable variance, both within and between subject role groups, indicating that different subject role groups perceived the meaning of the items quite differently.

The second derived form of the Subject Role Measure, based on the second sample subjects' responses and constructed independently of the responses of the first sample, included items selected on the basis of their discriminant ability. The means and standard deviations of the Subject Role Measure scales, the derived form for second role-playing sample, are shown in Table 12 (cf. Table 3 for first sample). For the second sample, the scales were more difficult to construct and fewer items overall qualified for inclusion. The Good Scale, especially, was poor in differentiating subject role groups, while the Negativistic

scale was the best discriminator in that the Negativistic subjects scored higher on this scale than the other subjects. The Negativistic scale, however, was not as efficient a discriminator as the Negativistic scale of the first sample.

Table 11

Inter-Scale Correlations

Second Role-Playing Sample, Derived Form

| | Good scale | Faithful scale | Negativistic scale | Apprehensive scale |
|---|---|---|---|---|
| Good scale | | -.477 G | -.340 G | -.208 G |
| | | .220 F | -.168 F | -.134 F |
| | | -.238 N | -.097 N | -.217 N |
| | | .485 A | .424 A | -.571 A |
| Faithful scale | | | .538 G | -.184 G |
| | | | -.109 F | -.173 F |
| | | | .123 N | .501 N |
| | | | .212 A | -.301 A |
| Negativistic scale | | | | -.224 G |
| | | | | .250 F |
| | | | | -.201 N |
| | | | | -.426 A |
| Apprehensive scale | | | | |

Note: G = Good subjects, F = Faithful subjects, N = Negativistic subjects, A = Apprehensive subjects.

Table 12

Scale Means and Standard Deviations

Second Role-Playing Sample, Derived Form

| | | Good scale | Faithful scale | Negativistic scale | Apprehensive scale |
|---|---|---|---|---|---|
| Good subjects | $\bar{X}$ | 12.111 | 13.900 | 12.300 | 12.955 |
| | SD | 2.726 | 2.142 | 2.917 | 2.637 |
| Faithful subjects | $\bar{X}$ | 14.444 | 16.350 | 19.900 | 16.318 |
| | SD | 3.095 | 2.762 | 3.948 | 4.912 |
| Negativistic subjects | $\bar{X}$ | 49.056 | 52.350 | 60.650 | 54.500 |
| | SD | 5.542 | 5.180 | 8.027 | 8.777 |
| Apprehensive subjects | $\bar{X}$ | 40.500 | 39.350 | 38.700 | 41.455 |
| | SD | 4.362 | 4.542 | 5.496 | 6.507 |

Note: 4 items in Good scale, 6 items in Faithful scale, 19 items in Negativistic scale, 13 items in Apprehensive scale.

The Kuder-Richardson formula number 8 reliabilities for both the original and derived forms are presented in Table 13 (cf. Table 5 for the first sample). It was apparent that the reliabilities overall did increase with the exception of the Apprehensive scale. Although the Apprehensive scale, in its derived form, was more effective in discriminating Apprehensive subjects, its reliability decreased for all subject groups. Of additional interest are the inter-scale correlations for the second sample, derived form presented in Table 14. The correlation between the Faithful and Negativistic scales was uniformly high across all subject role groups. These correlations reinforced the lack of effectiveness of the Faithful scale in the final form of the Subject Role Measure; subjects appeared to perceive a positive

Table 13

Kuder-Richardson No. 8 Reliabilities

Original and Derived Forms, Second Role-Playing Sample

| | | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|---|
| Good scale | T1 | .607 | .176 | .299 | .492 |
| | T2 | .731 | .425 | .560 | .535 |
| Faithful scale | T1 | .230 | .348 | .313 | .231 |
| | T2 | .648 | .503 | .608 | .791 |
| Negativistic scale | T1 | .708 | .653 | .778 | .791 |
| | T2 | .526 | .407 | .573 | .732 |
| Apprehensive scale | T1 | .660 | .565 | .670 | .812 |
| | T2 | .419 | .433 | .430 | .655 |

Note: T1 = Original form, T2 = Derived form.

relationship between it and the scale that purported to measure an opposite concept. The Good and Apprehensive scales were also positively correlated, but only for the Good and Apprehensive subjects. Again for the second sample, it seemed apparent that the Good and Apprehensive subject role concepts overlapped to some degree.

After the item analyses were completed, both a varimax (orthogonal rotation) and a binoramin (oblique rotation) factor analyses were completed on the second sample data. The factor loadings and factor structure obtained from these two methods were almost identical; the orthogonal loadings were therefore selected for factor structure definition. Factor 1 had a variance of 16.5584, a percent variance of 32.5584 and a cumulative percent variance of 32.5584. Factor 2 had a variance of 5.8012, a percent variance of 11.4074, and a cumulative

Table 14

Inter-Scale Correlations

Second Role-Playing Sample, Derived Form

| | Good scale | Faithful scale | Negativistic scale | Apprehensive scale |
|---|---|---|---|---|
| Good scale | | -.203 G<br>-.003 F<br>.476 N<br>.078 A | -.570 G<br>-.060 F<br>.357 N<br>.011 A | .224 G<br>-.140 F<br>-.054 N<br>.142 A |
| Faithful scale | | | .588 G<br>.264 F<br>.572 N<br>.678 A | -.362 G<br>-.014 F<br>.054 N<br>-.589 A |
| Negativistic scale | | | | -.321 G<br>-.067 F<br>.027 N<br>-.561 A |
| Apprehensive scale | | | | |

Note: G = Good subjects, F = Faithful subjects, N = Negativistic subjects, A = Apprehensive subjects.

percent variance of 43.9656. The orthogonally rotated factor matrix is presented in Table 15 (cf. Table 6 for first sample). It was obvious from a comparison of factor loadings between samples that the second sample had replicated the factor structure on the Subject Role Measure established by the first sample. This result lent support to the stability of the factors being considered. The two factors of the second sample were termed the Cooperative and the Obligated factors.

Table 15

Orthogonally-Rotated Factor Matrix

Second Role-Playing Sample

| Item No. | Factor 1 | Factor 2 |
|---|---|---|
| 1 | 0.764 | 0.237 |
| 2 | 0.064 | 0.161 |
| 3 | 0.549 | 0.032 |
| 4 | 0.716 | 0.402 |
| 5 | 0.693 | 0.049 |
| 6 | -0.524 | 0.178 |
| 7 | -0.323 | -0.140 |
| 8 | -0.454 | 0.429 |
| 9 | 0.118 | -0.600 |
| 10 | 0.400 | -0.270 |
| 11 | -0.681 | -0.236 |
| 12 | 0.284 | 0.511 |
| 13 | 0.729 | 0.247 |
| 14 | -0.596 | -0.409 |
| 15 | -0.563 | 0.033 |
| 16 | 0.285 | 0.211 |
| 17 | 0.667 | 0.173 |
| 18 | -0.783 | -0.137 |
| 19 | 0.056 | 0.538 |
| 20 | -0.372 | 0.327 |
| 21 | 0.484 | -0.169 |
| 22 | 0.659 | 0.349 |
| 23 | 0.002 | 0.492 |
| 24 | 0.744 | 0.254 |
| 25 | 0.098 | 0.274 |
| 26 | -0.478 | -0.349 |
| 27 | -0.254 | -0.530 |
| 28 | -0.705 | -0.364 |
| 29 | -0.613 | 0.061 |
| 30 | -0.202 | 0.440 |
| 31 | 0.806 | 0.107 |
| 32 | -0.296 | 0.109 |
| 33 | 0.086 | 0.398 |
| 34 | -0.018 | 0.259 |
| 35 | 0.293 | 0.629 |
| 36 | -0.075 | 0.628 |
| 37 | -0.532 | -0.502 |
| 38 | -0.363 | -0.311 |
| 39 | 0.625 | 0.338 |
| 40 | 0.289 | 0.674 |
| 41 | 0.615 | 0.224 |
| 42 | 0.184 | 0.322 |
| 43 | 0.713 | 0.004 |

Table 15 Continued

| Item No. | Factor 1 | Factor 2 |
|---|---|---|
| 44 | 0.451 | 0.072 |
| 45 | 0.807 | 0.331 |
| 46 | 0.810 | 0.078 |
| 47 | -0.526 | -0.263 |
| 48 | 0.363 | 0.590 |
| 49 | -0.367 | -0.030 |
| 50 | -0.243 | 0.626 |
| 51 | -0.548 | -0.299 |
| 52 | 0.214 | 0.737 |
| 53 | -0.513 | 0.043 |
| 54 | 0.296 | -0.173 |
| 55 | 0.095 | 0.335 |
| 56 | -0.017 | -0.161 |
| 57 | 0.624 | -0.148 |
| 58 | -0.477 | -0.067 |
| 59 | 0.740 | 0.317 |
| 60 | -0.082 | 0.620 |

As for the first sample, a conservative cutoff loading of .500 was chosen. The item meaning stems for each factor are presented in Table 16 (cf. Table 7 for first sample). The two factors correspond closely in meaning to the two factors established by the first sample. The positive loadings of the Cooperative factor considered together indicated a subject who is eager to help the experimenter, considers experimental participation a worthwhile activity, and tries in general to be an honest and accurate responder. The negative loadings, however, indicated a subject who resents experimental participation, partially from having it forced upon him; this subject would work at falsifying the data or giving responses that he knows are of no use to the experimenter. This factor paralleled closely the negative factor of the first sample. Finally, the positive loadings of the Obligated factor, taken together, represented a subject who believes that the

Table 16

Meaning Stems for Factor Loadings

Factor 1

Positive Loadings

| Item No. | Meaning stem |
|---|---|
| 1 | carefully follow instructions |
| 3 | never know how behavior evaluated |
| 4 | help experimenter get wanted results |
| 5 | avoid acting on basis of suspicions |
| 13 | pay close attention to experimenter |
| 17 | put everything out of mind to be honest and open |
| 22 | be involved and interested |
| 24 | no reason to resent participation |
| 31 | help experimenter learn more about people |
| 39 | important to work hard to be a good subject |
| 41 | help cause of science |
| 43 | try not to be influenced by what heard |
| 45 | be cooperative |
| 46 | give honest portrayal of own behavior |
| 57 | behave way usually do |
| 59 | follow instructions to letter |

Negative Loadings

| | |
|---|---|
| 6 | discomfort has been caused me as a subject because too cooperative |
| 11 | should be independent to point of not cooperating |
| 14 | shouldn't give experimenter desired behaviors |

Table 16 Continued

| Item No. | Meaning stem |
|---|---|
| 15 | as subject, lose rights of a person |
| 18 | okay to mess up experiment because not there by choice |
| 28 | okay to give experimenter no-use response |
| 29 | should feel angry as subject because being taken advantage of |
| 37 | no need to bend over backwards to be cooperative |
| 47 | should sometimes choose to go against instructions |
| 51 | should be uninvolved and apathetic |
| 53 | subject is like low-level employee - no status |
| | Factor 2 |
| Positive Loadings | |
| 12 | a good experimenter can find out things about you |
| 19 | give the experimenter the desired behavior |
| 23 | subject evaluated on how cooperative he is |
| 35 | should try to act the way the experimenter wants |
| 36 | if cooperative, rated more favorably |
| 40 | an experimenter can tell how well-adjusted a subject is |
| 48 | a subject's behavior can be used to evaluate abilities |
| 52 | important to present self favorably to experimenter because he is excellent judge of behavior |
| 60 | give the experimenter the desired behaviors |
| Negative Loadings | |
| 9 | shouldn't worry about what experimenter thinks |
| 27 | isn't important for experimenter to think well of me |
| 37 | no need to bend over backwards to be cooperative |

experimenter is judging or evaluating him; therefore this subject presents himself favorably and cooperates fully in order to secure a positive evaluation.

Table 17 presents the comparison between the first and second samples. Factor 1, positive loadings, was almost completely replicated by the second sample - the Cooperation pole seemed to be the strongest and most stable. The negative loadings of Factor 1 were also, for the most part, replicated. Factor 2 was confirmed to a lesser degree by the second sample (e.g., there was less consistency in significant item loadings). It seemed that the Obligated factor was less stable between samples.

Table 17

Comparison of Factor Scores Between

First and Second Role-Playing Samples

Factor 1, positive

| Item No. | First Role-Playing Sample | Second Role-Playing Sample |
|---|---|---|
| 1. B | .77 | .76 |
| 3. 2 | .21 | .54 |
| 4. 2 | .46 | .71 |
| 5. B | .58 | .69 |
| 13. B | .76 | .72 |
| 17. B | .75 | .66 |
| 22. B | .69 | .65 |
| 24. B | .69 | .74 |
| 31. B | .65 | .80 |

Table 17 Continued

| Item No. | First Role-Playing Sample | Second Role-Playing Sample |
|---|---|---|
| 39. B | .70 | .62 |
| 41. B | .81 | .62 |
| 43. B | .74 | .71 |
| 44. 1 | .57 | .45 |
| 45. B | .84 | .80 |
| 46. B | .80 | .81 |
| 57. B | .53 | .62 |
| 59. B | .60 | .74 |
| | Factor 1, negative | |
| 6. B | -.69 | -.52 |
| 11. B | -.67 | -.68 |
| 14. B | -.53 | -.59 |
| 15. B | -.72 | -.56 |
| 18. B | -.88 | -.78 |
| 26. 1 | -.56 | -.47 |
| 28. 2 | -.38 | -.70 |
| 29. B | -.69 | -.61 |
| 37. 2 | -.36 | -.53 |
| 47. B | -.63 | -.52 |
| 49. 1 | -.50 | -.36 |
| 51. B | -.71 | -.54 |
| 53. B | -.60 | -.51 |
| 58. 1 | -.51 | -.48 |

Table 17 Continued

| Item No. | First Role-Playing Sample | Second Role-Playing Sample |
|---|---|---|
| | Factor 2, positive | |
| 8. 1 | .51 | .42 |
| 12. B | .54 | .51 |
| 19. B | .71 | .53 |
| 25. 1 | .56 | .27 |
| 30. 1 | .58 | .44 |
| 34. 1 | .63 | .25 |
| 35. B | .82 | .62 |
| 36. B | .63 | .62 |
| 40. B | .58 | .67 |
| 48. 2 | .27 | .59 |
| 50. B | .57 | .62 |
| 52. B | .77 | .73 |
| 60. B | .61 | .62 |
| | Factor 2, negative | |
| 9. B | -.65 | -.60 |
| 27. 2 | -.47 | -.54 |
| 28. 1 | -.60 | -.36 |
| 37. B | -.53 | -.50 |

Note: 1 = loading significantly in first sample, 2 = loading significantly in second sample, and B = loading significantly in both samples.

For the second sample, a classification analysis identical to the one performed on the first sample was completed. Table 18 (cf. Table 8 for first sample) presents the subjects' group classification by factor scores. It was evident that the Good and Apprehensive subject roles were both combined into one factor, hence the lesser efficiency, compared to the Negativistic and Faithful roles, in classifying by factor scores.

Table 18

Subject Classification by Factor Scores

Second Role-Playing Sample

| | Good group | Faithful group | Negativistic group | Apprehensive group |
|---|---|---|---|---|
| Good subject | 5 6 8 9 10 11 12 13 15 18 | 1 2 3 7 14 17 | 4 | 16 |
| Faithful subject | 21 35 37 | 19 22 23 24 26 27 28 29 30 32 33 34 36 38 | 25 31 | 20 |
| Negativistic subject | 53 58 | 46 | 39 40 41 43 44 47 48 49 50 51 52 54 55 56 57 | 42 45 |
| Apprehensive subject | 63 68 72 74 77 | 60 61 64 69 | 59 62 67 73 | 65 66 70 71 75 76 78 79 80 |

Sample two, overall, replicated the factor structure of the Subject Role Measure that was established by sample one. The Cooperation factor seemed more stable than the Obligation factor, but the same

pattern of one bipolar and one unipolar factor emerged with similar meanings attached to each factor. The item analysis of the second sample indicated more difficulty in constructing scales that effectively differentiated the subject role groups. The Good and Faithful scales in particular were not discriminating. In addition, it was evident that the same items were not functioning in similar manners when compared between the first sample and the second sample. This result could indicate that the two samples saw the meaning of the items differently, although the replication of the factor structure precludes any fast adherence to this hypothesis.

Combined Samples

The results from the first sample and the second sample were combined and a similar statistical process to that used before was undertaken on this larger sample. It was hoped that the greater size of this sample would yield a more stable factor analysis, and that the item analyses based on both samples would indicate more clearly how each particular item was functioning with regard to each subject role group.

The responses of the combined sample were used to test a redesigned form of the Subject Role Measure. It was concluded, on the basis of the factor analyses computed on the first two samples, that there were three subject roles operating rather than the four roles suggested by Weber and Cook (1973). These three subject roles were drawn from the factor structure of the instrument: two roles from the bipolar Cooperation factor and one role from the unipolar Obligation factor. The first role was that of a Cooperative subject, conforming to the positive loadings of the first factor. This subject role subsumed the

Faithful subject and some of the Good subject behaviors and attitudes in that a Cooperative subject adopts a manner of positive active cooperation. This subject regards experimental participation as aiding both the cause of science and his own self-understanding. And he strives to be honest, accurate, and bias-free in his response to experimental stimuli. The negative loadings of factor one included the Negativistic subject role as described by Weber and Cook and suggested a subject who dislikes being coerced to participate in research and consequently is likely to give contrary or no-use responses. Finally, factor two's positive loadings suggested an Obligated subject who fears experimental participation because of his belief that the experimenter, being a psychologist, is an expert judge of personality adjustment and maladjustment. The Obligated subject, then, endeavors to present himself as favorably as possible in order to win positive evaluation. This subject role appeared to be a combination of the Apprehensive and part of the Good subject roles from Weber and Cook.

With these three subject roles in mind, the Subject Role Measure was reconstructed to yield three scales: Cooperative, Negativistic, and Obligated subject roles. The items included were chosen with regard to the following criteria: discriminating ability on item analyses, significant loading on factor analyses, high obtained communalities, and stability of performance between samples. The excluded items were also item analyzed, however, in a "scratch" scale in order to provide data on their performance with the combined sample. The means and standard deviations for the initial form of the redesigned Subject Role Measure are shown in Table 19. It was expected that both

Table 19

Scale Means and Standard Deviations

Combined Role-Playing Samples, Original Form

| | | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|---|
| Cooperative scale (N = 17) | $\bar{X}$ | 63.375 | 60.674 | 40.875 | 59.864 |
| | SD | 7.886 | 6.437 | 10.147 | 9.529 |
| Negativistic scale (N = 11) | $\bar{X}$ | 28.400 | 27.628 | 37.150 | 30.909 |
| | SD | 4.146 | 4.430 | 5.136 | 5.338 |
| Obligated scale (N = 12) | $\bar{X}$ | 37.550 | 31.674 | 36.375 | 38.091 |
| | SD | 5.277 | 5.733 | 5.526 | 5.295 |

Good and Faithful subjects would score highest on the Cooperative scale, that Negativistic subjects would be high scorers on the Negativistic scale, and that both Good and Apprehensive subjects would score highest on the Obligated scale. The means of the distribution of subjects' responses showed that the subject role groups scored as anticipated. Of additional interest are the inter-scale correlations presented in Table 20. The Cooperative and Negativistic scales were either negatively or not correlated which was expected given the opposite conceptual natures of the factors. The Obligated and Negativistic scales were more highly correlated.

On the basis of each item's performance with the combined sample, items were reverse keyed and reassigned to other scales as needed. After several repetitions of this process, a final item analysis was completed. The means and standard deviations are presented in Table 21.

Table 20

Inter-Scale Correlations

Combined Role-Playing Samples, Original Form

| | Cooperative scale | Negativistic scale | Obligated scale |
|---|---|---|---|
| Cooperative scale | | -.114 G | .082 G |
| | | .019 F | .019 F |
| | | -.223 N | .326 N |
| | | -.430 A | .216 A |
| Negativistic scale | | | .466 G |
| | | | .545 F |
| | | | .113 N |
| | | | .311 A |
| Obligated scale | | | |

Note: G = Good subjects, F = Faithful subjects, N = Negativistic subjects, A = Apprehensive subjects.

Table 21

Scale Means and Standard Deviations

Combined Role-Playing Samples, Final Form

| | | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|---|
| Cooperative scale | $\bar{X}$ | 49.375 | 48.907 | 25.475 | 44.909 |
| | SD | 8.080 | 6.682 | 9.831 | 10.687 |
| Negativistic scale | $\bar{X}$ | 24.900 | 25.698 | 46.600 | 27.886 |
| | SD | 5.881 | 6.018 | 8.024 | 9.568 |
| Obligated scale | $\bar{X}$ | 40.425 | 30.419 | 31.525 | 41.091 |
| | SD | 9.628 | 6.707 | 7.064 | 10.324 |

Note: Each scale consists of 12 items.

The Cooperative scale identified the Good and Faithful subjects, the Negativistic scale discriminated the Negativistic subjects, and the Obligated scale highlighted the Good and Apprehensive subjects. According to the item analyses, the redesigned Subject Role Measure with three scales was more efficient in discriminating either derived form separately between subject role groups, as indicated by means and standard deviations and inter-scale correlations.

The inter-scale correlations for the final form of the Subject Role Measure are presented in Table 22. These correlations indicated

Table 22

Inter-Scale Correlations

Combined Role-Playing Samples, Final Form

| | Cooperative scale | Negativistic scale | Obligated scale |
|---|---|---|---|
| Cooperative scale | | -.706 G | .050 G |
| | | -.646 F | -.096 F |
| | | -.784 N | .658 N |
| | | -.850 A | .162 A |
| Negativistic scale | | | -.055 G |
| | | | .393 F |
| | | | -.597 N |
| | | | -.289 A |
| Obligated scale | | | |

Note: G = Good subjects, F = Faithful subjects, N = Negativistic subjects, A = Apprehensive subjects.

more clearly the opposing nature of the Cooperative and Negativistic scales, the lack of relation between the Cooperative and Obligated scales, and the negative relation between the Obligated and Negativistic scales for those subjects directly measured. The exception to the above summary was the high positive correlation between the Good and Obligated scales for the Negativistic subjects. Since the Negativistic subjects were not affected by either of these two scales, the correlation was not indicative of a lack of scale effectiveness; rather, it seemed likely that the Negative subjects perceived cooperation by choice and cooperation by obligation as similar concepts and thus answered the scales' items similarly.

The Kuder-Richardson formula number 8 reliabilities are shown in Table 23 for both the original and final forms of the Subject Role Measure. The reliabilities for the final form, especially for the

Table 23

Kuder-Richardson No. 8 Reliabilities

Original and Final Forms, Combined Role-Playing Samples

| | | Good subjects | Faithful subjects | Negativistic subjects | Apprehensive subjects |
|---|---|---|---|---|---|
| Cooperative scale | T1 | .788 | .678 | .820 | .832 |
| | T2 | .896 | .818 | .892 | .929 |
| Negativistic scale | T1 | .545 | .562 | .500 | .611 |
| | T2 | .745 | .746 | .788 | .897 |
| Obligated scale | T1 | .648 | .694 | .487 | .614 |
| | T2 | .896 | .771 | .684 | .906 |

Note: T1 = Original form, T2 = Final form.

Obligated and Negativistic scales, were considerably improved over the original form.

The responses of the combined sample were also factor analyzed, using both the orthogonal (varimax) and oblique (binoramin) rotational matrices. In the test factoring, it was found that the orthogonal and oblique rotations were virtually identical. Therefore, the orthogonal rotation was used as the basis for determining factor structure. The communality estimates for the 36 items ranged from .366 to .786, with most estimates in the .500 to .600 range. The obtained communalities ranged from .179 to .800, with the majority of the communalities being in the .400 to .600 range. Table 24 presents both the estimated and obtained communalities for the 36 items.

The first factor had a variance of 13.1617, a percent variance of 60.2876, and a cumulative percent variance of 60.2876. The second factor had a variance of 4.3493, a percent variance of 19.9224, and a cumulative percent variance of 80.2100. These two factors, then, the only significant factors, accounted for 80% of the variance in the redesigned Subject Role Measure. The orthogonally rotated factor matrix is presented in Table 25. Items 1 through 12 are those items comprising the Cooperative scale, items 13 through 24, the Negativistic scale; and items 25 through 36, the Obligated scale. In only two cases (items 27 and 30) were the factor loadings below .500; these two items were selected on the basis of their discriminant ability as shown by the item analyses.

The data from the combined sample allowed several conclusions to be drawn. First, the three scale construction of the Subject Role

Table 24

Estimated and Obtained Communalities

| Item No. | Estimated | Obtained |
|---|---|---|
| 1 | 0.783 | 0.684 |
| 2 | 0.610 | 0.543 |
| 3 | 0.468 | 0.405 |
| 4 | 0.780 | 0.669 |
| 5 | 0.637 | 0.508 |
| 6 | 0.690 | 0.574 |
| 7 | 0.660 | 0.534 |
| 8 | 0.661 | 0.560 |
| 9 | 0.665 | 0.552 |
| 10 | 0.652 | 0.540 |
| 11 | 0.838 | 0.799 |
| 12 | 0.758 | 0.656 |
| 13 | 0.443 | 0.357 |
| 14 | 0.676 | 0.509 |
| 15 | 0.624 | 0.497 |
| 16 | 0.536 | 0.403 |
| 17 | 0.785 | 0.709 |
| 18 | 0.534 | 0.346 |
| 19 | 0.606 | 0.516 |
| 20 | 0.599 | 0.426 |
| 21 | 0.659 | 0.597 |
| 22 | 0.539 | 0.453 |
| 23 | 0.514 | 0.389 |
| 24 | 0.671 | 0.584 |
| 25 | 0.540 | 0.414 |
| 26 | 0.478 | 0.363 |
| 27 | 0.545 | 0.321 |
| 28 | 0.578 | 0.394 |
| 29 | 0.457 | 0.268 |
| 30 | 0.366 | 0.178 |
| 31 | 0.651 | 0.581 |
| 32 | 0.511 | 0.397 |
| 33 | 0.631 | 0.485 |
| 34 | 0.601 | 0.444 |
| 35 | 0.565 | 0.437 |
| 36 | 0.500 | 0.400 |

Table 25

Orthogonally Rotated Factor Matrix

Non-Role-Playing Subjects

| Item No. | Factor 1 Cooperation Factor | Factor 2 Obligation Factor |
|---|---|---|
| 1 | 0.801 | 0.206 |
| 2 | 0.622 | 0.394 |
| 3 | 0.636 | 0.004 |
| 4 | 0.794 | 0.196 |
| 5 | 0.712 | -0.000 |
| 6 | 0.720 | 0.233 |
| 7 | 0.729 | 0.054 |
| 8 | 0.744 | 0.084 |
| 9 | 0.735 | 0.106 |
| 10 | 0.723 | -0.130 |
| 11 | 0.854 | 0.262 |
| 12 | 0.795 | -0.153 |
| 13 | -0.573 | 0.171 |
| 14 | -0.697 | -0.149 |
| 15 | -0.598 | -0.373 |
| 16 | -0.618 | 0.142 |
| 17 | -0.838 | -0.083 |
| 18 | -0.548 | -0.215 |
| 19 | -0.588 | -0.412 |
| 20 | -0.633 | 0.158 |
| 21 | -0.708 | -0.309 |
| 22 | -0.650 | -0.173 |
| 23 | -0.559 | 0.275 |
| 24 | -0.706 | -0.292 |
| 25 | -0.388 | 0.513 |
| 26 | -0.083 | 0.597 |
| 27 | 0.332 | 0.459 |
| 28 | 0.072 | 0.623 |
| 29 | -0.057 | 0.515 |
| 30 | 0.252 | 0.338 |
| 31 | 0.248 | 0.720 |
| 32 | 0.059 | 0.627 |
| 33 | 0.480 | 0.505 |
| 34 | 0.385 | 0.543 |
| 35 | -0.196 | 0.631 |
| 36 | 0.038 | 0.631 |

Measure appeared to be more efficient in discriminating the subject role groups than the four scale instrument had been; an example is the high scores of the "appropriate" subject role groups. The means and standard deviations of the response distribution clearly indicated that the scales were differentiating the appropriate role groups. Secondly, the factor analysis of the combined group indicated that the items chosen were based on factors showing stability and independence. The final form of the Subject Role Measure, being based on data from item analyses, factor analyses, and comparisons between samples, seemed to be the best possible way of measuring subjects' role-related attitudes.

Non-Role-Playing Subjects (Third Sample)

The third sample consisted of 190 students who were not role-playing a subject role, but rather filled out the Subject Role Measure reporting their own personal opinions and attitudes. Their responses were item analyzed and factor analyzed in similar manner to the responses of the role-playing samples in order to determine the similarities between the role-playing and non-role-playing samples.

The responses of the 190 non-role-playing subjects were test factored to determine the number of significant factors. Table 26 presents the factors and their variances up to and including the fifth factor. Using Montanelli and Humphrey's (1976) parallel analysis method, the first 13 factors were found to exceed the critical value. This result, however, was taken to be a Type II error; the grounds for this conclusion were the limited number of items loading on the factors. Determination of number of factors was based on a consideration of the

Table 26

Five Significant Factors, Non-Role-Playing Sample

| Factor | Variance | Percent Variance | Cumulative Percent |
|---|---|---|---|
| 1 | 2.7573 | 26.6407 | 26.6407 |
| 2 | 2.4502 | 23.6732 | 50.3137 |
| 3 | 1.1809 | 11.4099 | 61.7238 |
| 4 | 1.0524 | 10.1680 | 71.8918 |
| 5 | 0.9195 | 8.8839 | 80.7757 |

plot of eigen values (see Figure 1). It appeared that there were three distinct factor groupings: factors 1 and 2, factors 3 through 5, and factors 6 through 13. It was decided that the first two factor groupings only would be considered; therefore, two separate factor analytic programs were completed, one for two factors and one for five factors.

A two-factor analysis was completed on the data, using both orthogonal and oblique rotations (i.e., principal components, varimax, oblique, rotoplot). It was determined that the two factors were orthogonal in nature by comparing the matrices and factor loadings established by both the orthogonal and oblique rotations. Therefore, the orthogonal results were considered (see Table 27 for factor matrix). The factors were considered independently of those obtained by the results of the role-playing subjects, and the meaning stems of those items loading over .250 were chosen for consideration (see Table 28 for meaning stems).

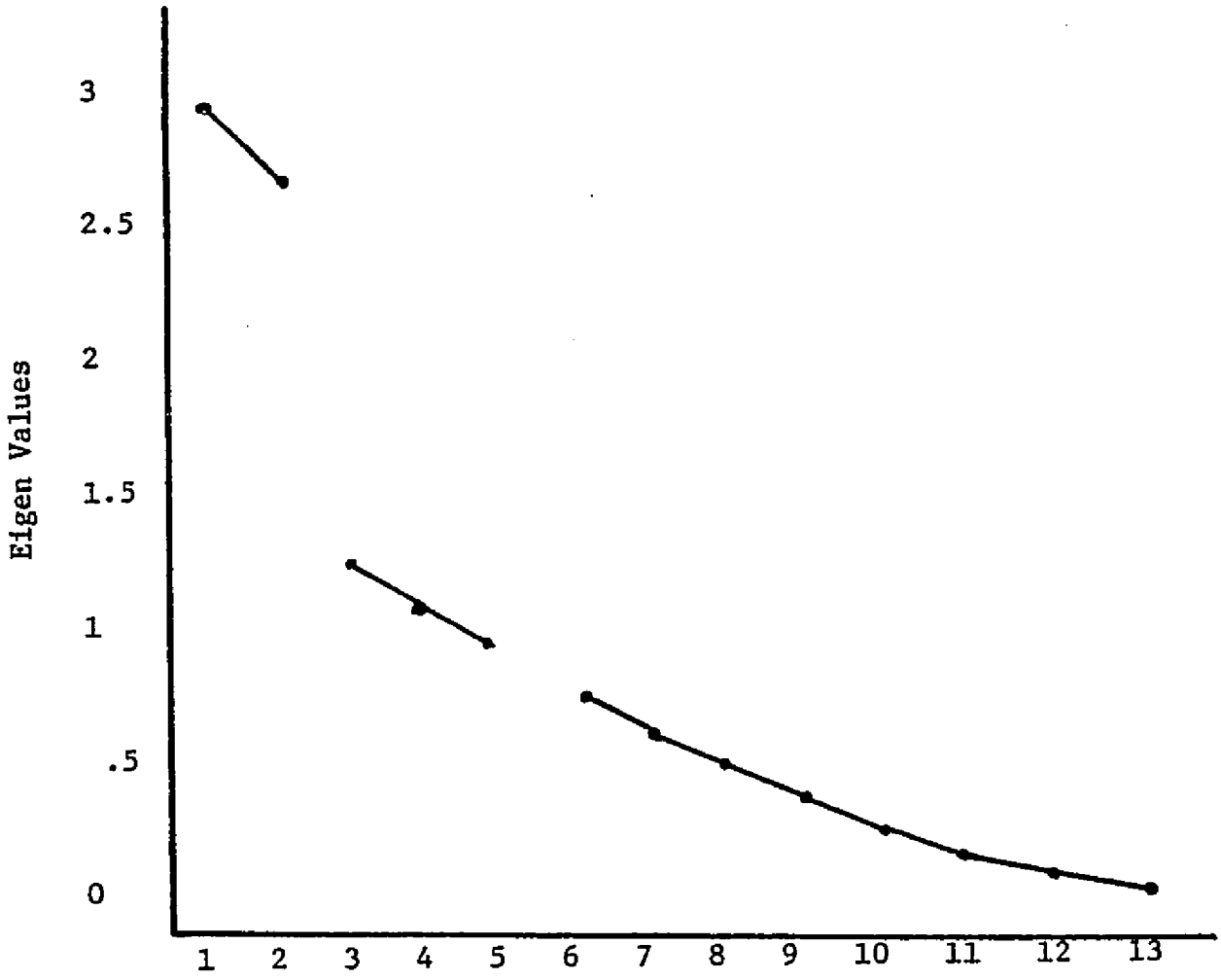


Figure 1

Plotting Eigen Values Against Factors

Non-Role-Playing Sample

Table 27

Orthogonally Rotated Two Factor Matrix

Non-Role-Playing Sample

| Item No. | | Factor 1 | Factor 2 |
|---|---|---|---|
| 1 | 1 | 0.176 | 0.024 |
| 4 | 2 | -0.084 | 0.424 |
| 5 | 3 | 0.306 | -0.088 |
| 13 | 4 | 0.278 | 0.021 |
| 17 | 5 | 0.389 | 0.173 |
| 22 | 6 | 0.253 | 0.432 |
| 24 | 7 | 0.277 | 0.135 |
| 31 | 8 | 0.392 | 0.027 |
| 41 | 9 | 0.254 | 0.063 |
| 43 | 10 | 0.561 | -0.011 |
| 45 | 11 | 0.389 | 0.104 |
| 46 | 12 | 0.374 | -0.189 |
| 6 | 13 | -0.279 | -0.055 |
| 11 | 14 | -0.190 | 0.050 |
| 14 | 15 | -0.149 | -0.378 |
| 15 | 16 | -0.160 | 0.282 |
| 18 | 17 | -0.375 | -0.082 |
| 26 | 18 | -0.078 | -0.345 |
| 28 | 19 | -0.106 | -0.372 |
| 29 | 20 | -0.225 | 0.100 |
| 39 | 21 | -0.166 | -0.380 |
| 51 | 22 | -0.365 | 0.016 |
| 57 | 23 | -0.307 | 0.002 |
| 59 | 24 | -0.421 | 0.060 |
| 8 | 25 | -0.384 | 0.315 |
| 9 | 26 | -0.366 | 0.273 |
| 12 | 27 | -0.044 | 0.447 |
| 19 | 28 | -0.100 | 0.278 |
| 30 | 29 | -0.268 | 0.238 |
| 33 | 30 | 0.113 | 0.174 |
| 35 | 31 | -0.140 | 0.544 |
| 36 | 32 | 0.053 | 0.403 |
| 37 | 33 | 0.217 | 0.200 |
| 40 | 34 | 0.063 | 0.452 |
| 50 | 35 | -0.229 | 0.384 |
| 60 | 36 | -0.026 | 0.255 |

Table 28

Meaning Stems of the Two Factor Items

Non-Role-Playing Sample

Factor 1
Cooperation Factor

Positive Loadings

| Item No. | Meaning stem |
|---|---|
| 5 C | avoid acting on basis of suspicions |
| 13 C | pay close attention to the experimenter |
| 17 C | be honest and accurate as possible |
| 22 C | be involved and interested |
| 24 C | no reason to resent participating |
| 31 C | help the experimenter learn about people |
| 41 C | help cause of science |
| 43 C | try not to be influenced |
| 45 C | always be cooperative |
| 46 C | give honest portrayal of behavior |

Negative Loadings

| | |
|---|---|
| 18 N | okay to mess up experiment because not there by choice |
| 51 N | be uninvolved and apathetic |
| 57 N | behave way usually do |
| 59 N | follow instructions |
| 8 O | important to know real reason so can choose to cooperate |
| 30 O | be nervous because don't know what experimenter thinking |
| 6 N | lot of discomfort caused me because too cooperative |
| 9 O | shouldn't worry what experimenter thinks |

Table 28 Continued

Factor 2
Obligation Factor

Positive Loadings

| Item No. | Meaning stem |
|---|---|
| 4 C | help experimenter get desired results |
| 22 C | be involved and interested |
| 15 N | lose my rights as person when subject |
| 8 O | important to know real reason so can choose to cooperate |
| 9 O | should worry about how experimenter thinks |
| 12 O | good experimenter can figure things out about me |
| 19 O | give experimenter behaviors he wants to see |
| 35 O | act the way the experimenter wants me to |
| 36 O | if cooperate, rated more favorably |
| 40 O | experimenter can tell how well-adjusted I am |
| 50 O | should try to figure out what experimenter wants |
| 60 O | should give experimenter desired behaviors if figure out "real reason" |

Negative Loadings

| | |
|---|---|
| 14 N | shouldn't give experimenter desired behaviors |
| 26 N | don't need to be involved or interested |
| 28 N | okay to give no-good response |
| 39 N | not important to work to be "good" subject |

Note: C = Cooperative item, N = Negativistic item, O = Obligated item.

It appeared that the factor structure did replicate the two factor structure of the role-playing subjects' responses. The positive loadings of the first factor clearly conformed to the Cooperative subject concept as indicated by a comparison of the first factors between samples. The negative loadings of the first factor included 5 Negativistic items (#6, 18, 51, 57, 59) but also 3 unrelated Obligated items (#8, 9, 30). These Obligated items did fit with the broad concept, however, of an unwilling subject who chooses whether or not to cooperate and who, for the most part, attempts to disregard the experimenter's opinions.

The second factor, positive loadings, also clearly replicated the Obligated subject concept as indicated by a comparison of the second factors between samples. Although there were items included that were not Obligated (#4, 15, 22), they conformed in idea to the concept of a subject dependent on the experimenter for approval, that is a subject who loses his rights as a person in the search for the "right" behaviors. The negative loadings of the second factor (cf. Table 17) were a weak partial factor, and yet also had a coherent theme of independence of thinking and behaving. Since the positive items indicated dependence for approval, the negative items suggested independence of approval.

A Tucker factor comparison (Korth and Tucker, 1975) was completed to compare the two factors established by the combined role-playing sample with the factors from the analysis of the non-role-playing subjects. The statistic is a correlation coefficient that can range from -1.00 to +1.00. The obtained values were .820 for comparisons between the first factors, and .752 for the second factors. Any value between

.700 and +1.00 indicates high positive relationship (Korth and Tucker, 1975). It was concluded, on the basis of this comparison, that the non-role-playing sample did replicate the two factor structure earlier established by the role-playing subjects.

It was important, however, also to consider the five factor structure. Although the two primary factors were the significant ones to consider, the second factor group suggested the possibility of additional information concerning the meanings of the factors. Using both orthogonal and oblique rotations, it was determined that the five factor structure was orthogonal in nature. Therefore, the orthogonally-rotated matrix was selected for consideration and it is presented in Table 29. Again, a cut-off loading of .250 was chosen for item selection. Table 30 presents the item numbers and meaning stems for the items significantly loading on the five factors.

From an examination of Table 30, it was apparent that the five factors' meanings did add additional detail to the two factor structure. The first factor, positive and negative loadings, represented a dimension of subject behavior and attitudes that could be termed dependence-independence. As such, it cut across Obligated and Negativistic concepts. The second factor contained items which constituted a dimension of cooperation-noncooperation; this dimension subsumed much of the Cooperation factor in the two factor structure. The third factor incorporated elements of a subject attitude of suspicion, specifically disregarding suspicions versus acting upon them. The fourth factor had only positive loadings to consider, and seemed a clear replication of the Obligation factor. And factor five, a small factor, included

Table 29

Orthogonally Rotated Five Factor Matrix

Non-Role-Playing Sample

| Item No. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | 0.130 | 0.141 | 0.112 | -0.094 | 0.005 |
| 4 | 0.436 | -0.037 | -0.084 | 0.156 | -0.036 |
| 5 | -0.048 | 0.083 | 0.413 | -0.023 | 0.053 |
| 13 | -0.056 | 0.231 | 0.075 | 0.001 | -0.218 |
| 17 | 0.170 | 0.098 | 0.554 | 0.159 | 0.056 |
| 22 | 0.105 | 0.085 | 0.045 | 0.277 | -0.616 |
| 24 | 0.075 | 0.329 | 0.092 | 0.138 | 0.005 |
| 31 | 0.021 | 0.539 | -0.005 | -0.005 | -0.046 |
| 41 | -0.083 | 0.285 | 0.061 | 0.157 | -0.083 |
| 43 | 0.023 | 0.261 | 0.510 | -0.072 | -0.158 |
| 45 | 0.176 | 0.379 | 0.189 | -0.019 | -0.002 |
| 46 | -0.329 | 0.201 | 0.334 | 0.065 | -0.073 |
| 6 | -0.168 | -0.289 | -0.081 | 0.118 | 0.049 |
| 11 | -0.025 | -0.317 | 0.047 | 0.096 | -0.037 |
| 14 | -0.428 | -0.201 | 0.145 | -0.087 | 0.030 |
| 15 | 0.064 | 0.064 | -0.323 | 0.306 | -0.077 |
| 18 | -0.008 | 0.014 | -0.472 | -0.025 | 0.292 |
| 26 | -0.132 | 0.093 | 0.105 | -0.052 | 0.715 |
| 28 | -0.413 | -0.024 | -0.119 | -0.098 | 0.079 |
| 29 | 0.049 | -0.274 | -0.027 | 0.109 | 0.017 |
| 39 | -0.398 | 0.015 | -0.270 | -0.146 | 0.068 |
| 51 | -0.043 | -0.234 | -0.121 | 0.226 | 0.344 |
| 57 | 0.238 | -0.307 | -0.150 | -0.253 | 0.046 |
| 59 | 0.086 | -0.468 | -0.124 | 0.005 | 0.033 |
| 8 | 0.280 | -0.258 | -0.232 | 0.218 | 0.117 |
| 9 | 0.137 | -0.214 | -0.361 | 0.196 | -0.103 |
| 12 | 0.221 | -0.025 | 0.008 | 0.448 | -0.019 |
| 19 | 0.077 | -0.070 | -0.024 | 0.359 | 0.019 |
| 30 | 0.025 | -0.290 | -0.068 | 0.330 | -0.023 |
| 33 | -0.053 | 0.013 | 0.157 | 0.304 | -0.094 |
| 35 | 0.437 | -0.063 | -0.062 | 0.395 | 0.068 |
| 36 | 0.384 | 0.019 | -0.020 | 0.105 | -0.209 |
| 37 | 0.307 | 0.278 | 0.035 | -0.022 | 0.008 |
| 40 | 0.100 | 0.068 | -0.008 | 0.501 | -0.206 |
| 50 | 0.248 | -0.090 | -0.136 | 0.386 | 0.152 |
| 60 | 0.370 | -0.019 | -0.011 | -0.008 | 0.010 |

Table 30

Meaning Stems of the Five Factor Matrix

Non-Role-Playing Subjects

Factor 1

Positive Loadings

| Item No. | Meaning stem |
|---|---|
| 4 C | be good subject, give experimenter desired results |
| 8 O | important to figure out experiment so choose to cooperate |
| 35 O | act the way the experimenter wants me to |
| 36 O | if cooperate, rated more favorably |
| 37 O | no need to bend over backwards to be cooperative |
| 60 O | give experimenter desired behaviors if figure out experiment |

Negative Loadings

| | |
|---|---|
| 14 N | shouldn't give experimenter desired behaviors |
| 28 N | okay to give no-use response |
| 39 N | not important to work hard to be good subject |

Factor 2

Positive Loadings

| | |
|---|---|
| 24 C | no real reason to resent participating |
| 31 C | help experimenter learn more about people |
| 41 C | help cause of science |
| 43 C | try not to be influenced |
| 45 C | always be cooperative |

Table 30 Continued

| Item No. | | Meaning stem |
|---|---|---|
| **Negative Loadings** | | |
| 6 | N | discomfort has been caused me because too cooperative |
| 11 | N | be independent to point where won't cooperate |
| 29 | N | feel angry because taken advantage of |
| 57 | N | behave way I usually do |
| 59 | N | follow instructions |
| 8 | A | important to figure out experiment so can choose to cooperate |
| 30 | A | be nervous because never know what experimenter thinking |
| **Factor 3** | | |
| **Positive Loadings** | | |
| 5 | C | avoid acting on basis of suspicions |
| 17 | C | put everything out of mind to be honest and accurate |
| 43 | C | try not to be influenced by what heard |
| 46 | C | give honest portrayal of behavior |
| **Negative Loadings** | | |
| 15 | N | lose rights as person when subject |
| 18 | N | okay to mess up experiment because not there by choice |
| 9 | A | shouldn't worry about how experimenter thinks of me |
| **Factor 4** | | |
| **Positive Loadings** | | |
| 12 | A | good experimenter can tell what kind of person I am |
| 19 | A | I know what experimenter wants and give him those behaviors |
| 30 | A | should be nervous because never know what experimenter is thinking |

Table 30 Continued

| Item No. | Meaning stem |
|---|---|
| 33 A | concern about how I come across as person |
| 35 A | act the way the experimenter wants me to |
| 40 A | experimenter can tell how well-adjusted I am |
| 50 A | try to figure out kind of behavior experimenter wants |
| | Factor 5 |
| Positive Loadings | |
| 22 C | be involved and interested in study |
| Negative Loadings | |
| 26 N | don't need to be interested |
| 51 N | be uninvolved and apathetic |

Note: C = Items from Cooperative scale, N = Items from Negativistic scale, O = Items from Obligation scale.

the attitude of involvement-noninvolvement which cut across the Cooperation factor. Overall, the five factors provided additional insight into possible sub-elements of the major two factors. It appeared that attitudes to consider on the part of subjects were suspicion, dependence or independence, and involvement or non-involvement.

The 190 non-role-playing subjects' responses were also used to obtain scale means and standard deviations for the three subject role scales. The Cooperative scale, containing 12 items, had an average score across all subjects of 45.047, a standard deviation of 4.254, and a Kudor-Richardson No. 8 reliability of .603. The Negativistic scale, also containing 12 items, had a mean of 28.289, with a standard

deviation of 3.824 and a reliability of .495. And the Obligated scale had a mean of 29.863, a standard deviation of 4.496, and a reliability of .689. Figure 2 shows the population distribution graph used to arrive at the decision rules for subject classification.

Given the inverse relation of the Cooperative and Negativistic scales, it seemed mandatory that any subject classified as one of these subject roles would score extremely low on the other scale. Because the Obligated and Cooperative scales were more positively related, this inverse relationship could not be expected for these two scales. Given these contingencies, the following two standard deviation decision rules were established. For a Cooperative subject, the Cooperative scale score must be two standard deviations (9 points) above the next highest scale score. For a Negativistic subject, the Negativistic scale score should be at least 36, and the Cooperative scale score should be below 38. The limit on the Obligation scale for Negativistic subjects is 35. Finally, the Obligated subject should score 36 or above on the Obligated scale. The Cooperative scale limit is 49, and the Negativistic scale limit is 32. However, both the Cooperative and Negativistic scores cannot be above their respective means.

Because of the paucity of subjects, a one standard deviation rule was used to classify the fourth sample. The one standard deviation decision-making rule called for the following scores. A Cooperative subject must score 9 points above the next highest scale on the Cooperative scale. A Negativistic subject would need to score 32 on the Negativistic scale, and have a Cooperative score below 42. The

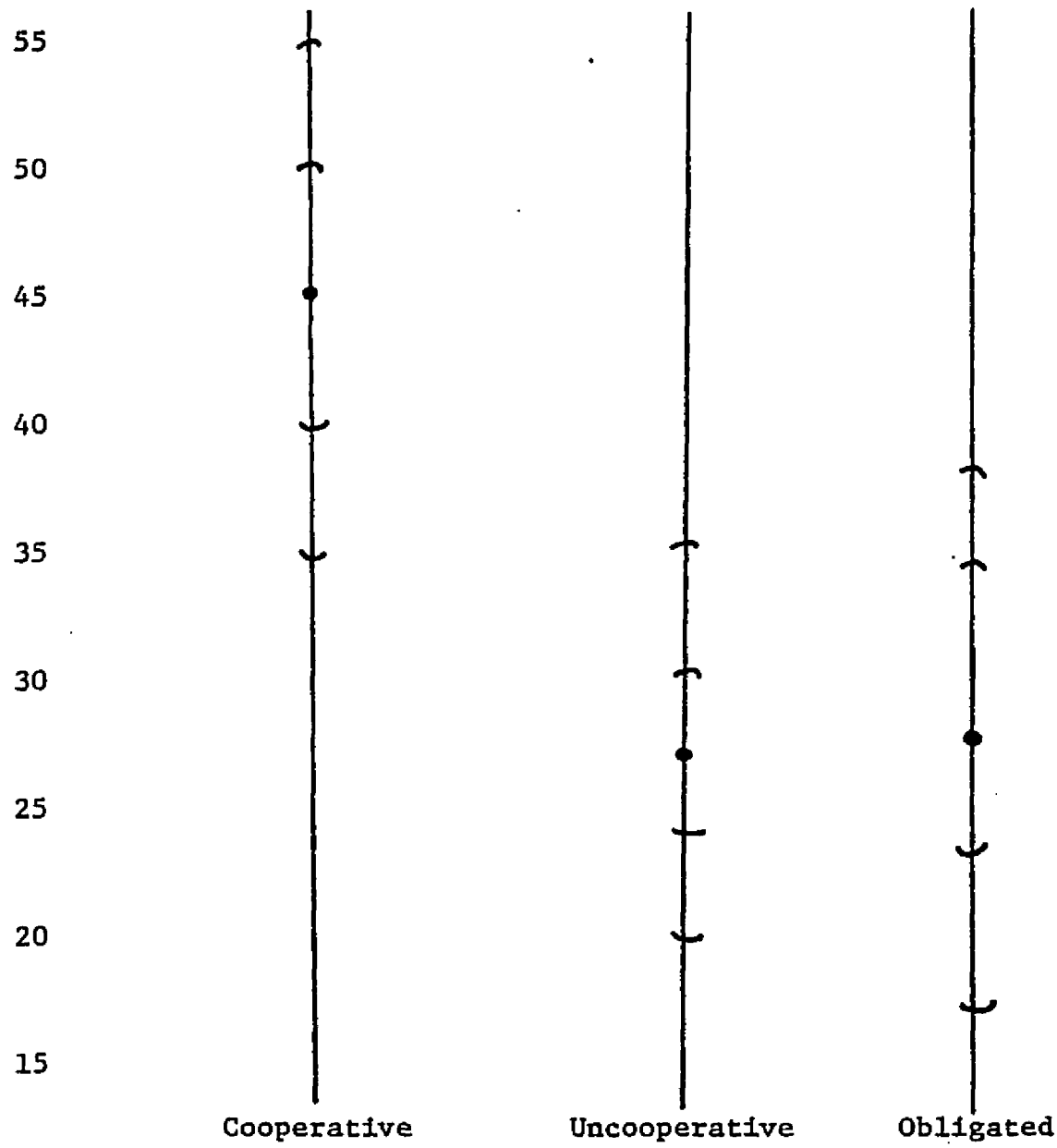


Figure 2

Population Distribution of Scores

Third Sample

Obligated scale score would be below 35. And an Obligated subject would need to score 34 on the Obligated scale; the Negativistic score would be limited to below 32 and the Cooperative score to below 49, with not both the Negativistic and Cooperative scores above their means.

After classifying the 190 non-role-playing subjects with the two standard deviation decision rule, it was found that 78%, or 148, of the non-role-playing subjects were classified as Cooperative subjects; 1%, or 1 subject was classified as Negativistic; 9%, or 17 subjects were classified as Obligated; and 13%, or 24 subjects were unclassifiable. On the same sample, using the less conservative one standard deviation rule, 72%, or 137 subjects were Cooperative; 8%, or 15 subjects were Negativistic; 14%, or 27 subjects were Obligated; and 6%, or 11 subjects were not classified.

Of additional interest is the inter-scale correlation matrix presented in Table 31. As expected from the structure of the Subject Role Measure, the correlation between the Cooperative and Negativistic scales was large and negative. The Negativistic and Obligated scales showed no relation, as was the case with the Cooperative and Obligated scales. The fact that the non-role-playing subjects confirmed the scale relationships, as evidenced by this correlation matrix, strengthened the belief in the factor analytic structure of the instrument, especially in the stability of the concepts on which the scales are based.

Overall, the third sample of 190 non-role-playing subjects gave results that yielded similar factor relationships to those of

Table 31

Inter-Scale Correlations

Non-Role-Playing Sample

| | Cooperative scale | Negativistic scale | Obligated scale |
|---|---|---|---|
| Cooperative scale | | -.506 | .055 |
| Negativistic scale | | | -.083 |
| Obligated scale | | | |

role-playing subjects. The major difference is the additional error variance that blurred the clearer factors of the role-playing results. It was to be expected that the non-role-playing subjects' responses would be more varying, in that the role-playing subjects provided a sample of extremes in beliefs and attitudes while the non-role-playing subjects yielded a wider spectrum of opinions about research participation. Taking the factor analyses, both two and five factor, into account, it appeared that the factor structure was stable and the factors persisted from sample to sample. This result gave more confidence to the scales as constructed in the Subject Role Measure specifically, and to the overriding idea that subject roles can be directly measured.

PART 2

Experiment Participation Subjects (Fourth Sample) (N = 60)

The fourth sample of subjects was classified according to the three scales (Cooperative, Negativistic, and Obligated subject) of the

final form of the Subject Role Measure. The subjects then participated in a dyadic conformity test experiment (cf. chapter 3). The data of the fourth sample provided two additional areas of information. First, more information on the reliability and structure of the Subject Role Measure was gathered. And second, the subjects' net conformity scores provided suggestive data concerning subject role-related behavioral differences.

All subjects in this sample were administered the Subject Role Measure twice in order to ascertain the degree of test-retest reliability. For the Cooperative scale, the reliability coefficient was .721; for the Negativistic scale, .539; and for the Obligated scale, .865. The test-retest period was approximately 21 days in length. It was concluded, based on these coefficients, that the two scales were relatively stable over time. The exception was the Negativistic scale; however, the Negativistic subjects experimentally related behavior (cf. Weber and Cook, 1973) could explain the lack of consistency in their responses.

Of additional interest were the inter-scale correlations at the first and second administrations of the Subject Role Measure. These correlations are presented in Table 32. The previous relationships between the scales were again found to exist. The Negativistic and Cooperative scales were clearly negatively correlated, and more so on the second administration. This result would be expected given the bipolarity of the factor on which these scales were based. The Obligated and Cooperative scales were moderately correlated, a relation which reflected their slight conceptual similarity. And the Obligated

Table 32

Inter-Scale Correlations

Experiment Participant Sample

| | | Cooperative scale | Negativistic scale | Obligated scale |
|---|---|---|---|---|
| Cooperative scale | T1 | | -.48551 | .34649 |
| | T2 | | -.77708 | .23505 |
| Negativistic scale | T1 | | | -.24952 |
| | T2 | | | -.17779 |
| Obligated scale | T1 | | | |
| | T2 | | | |

Note: T1 = First administration, T2 = Retest.

and Negativistic scales were moderately negatively correlated, again replicating the disparity of background concepts.

As related in chapter 3, net conformity scores are computed as a transformed correlation between the partner's presumed ranking and the subject's second ranking. Net conformity means for each condition are presented in Table 33. An unweighted means analysis of variance was performed on the net conformity scores, and the mean square values, F ratios, and p values are presented in Table 34. One effect was significant - the task competence condition. Examination of Table 33 revealed that the partner (perceived) superior subjects manifested significantly more net conformity than the subject (perceived) superior subjects. The interaction effect of subject roles with task competency was significant at a level to make further inquiry essential, though not at conventional levels, as it was possible that the limited sample

Table 33

Mean Net Conformity Scores

| Task Competency | Subject Role Group: Cooperative subjects | Negativistic subjects | Obligated subjects | Totals |
|---|---|---|---|---|
| Subject Superior | -.06959 (19) | -.12772 (4) | -.03827 (5) | -.07853 (28) |
| Partner Superior | .07809 (17) | .37910 (5) | .15515 (6) | .20411 (28) |
| Totals | .00425 (36) | .12568 (9) | .05843 (11) | .06279 (56) |

Note: Numbers in parentheses are number of subjects for each cell, row, or column.

Table 34

Analysis of Variance

| Source | Df | Mean Square | F | p |
|---|---|---|---|---|
| Subject Roles (A) | 2,50 | .04785 | 0.9216 | .4045 |
| Task Competence (B) | 1,50 | .77468 | 14.919 | .00032 |
| A x B | 2,50 | .12353 | 2.3791 | .10304 |

size precluded significant effects from being isolated.

In order to determine the power of the F test, an effects indicator index (Cohen, 1969) was calculated. The index *f*, related to the index *phi* used in the standard treatment of power, is a ratio of the variance of the means to the error variance and allows tentative conclusions concerning magnitude of effects. The obtained *f* was .495 which yielded a power of .50. The conclusion drawn was that a larger sample size (e.g., approximately four times the number of subjects used in this study) would have allowed for a more powerful test of effects.

The data from the fourth sample did not provide support for hypotheses concerning behavioral differences between subject role groups. The *p* value of .40 is not encouraging. It is possible that the small sample size accounted for the lack of significance. More likely, however, the use of the less conservative decision rule allowed subjects to be misclassified, particularly the Negativistic subjects.

The data from sample four permitted additional confidence to be placed in the scales of the *Subject Role Measure*. Their inter-scale correlations replicated the relationship between the scales, which in itself confirms the stability of the factors on which the scales were based. The test-retest reliability was encouraging, although the Negativistic scale's coefficient could have been stronger. Lastly, the suggestive data from the test experiment allowed tentative conclusions that the subject role scores from the *Subject Role Measure* could also indicate behavioral differences; this conclusion needs further testing in order to state with more confidence that differences in *Subject Role Measure* scores could indicate behavioral differences in an experiment.

# CHAPTER V

# DISCUSSION

The goal of this study was to formulate an instrument, the Subject Role Measure, to measure directly experimental subjects' proclivities to role adoption. This goal was a necessary step in investigating the specific area of experimental artifact known as subject effects. One subject effect is the roles that subjects may adopt during research participation, roles which may influence the subjects to cooperate or to go against stimuli they perceive to be demand characteristics of the experiment (Orne, 1962). If subjects are adopting these roles, then some of the conclusions drawn by experimenters on the basis of their data may in fact be false. Previous attempts to measure subjects' role adoption in order to gain control over these possible sources of bias, however, have been indirect inferences of subject effects from the dependent variables (i.e., Cook et al., 1970). Therefore, the Subject Role Measure was conceived as a direct measure of subjects' role adoption.

Taken as a whole, this research answered one question and raised two different questions. The question answered, in the affirmative, was "do subject roles exist?". Weber and Cook's (1973) review detailed the accumulated evidence that subject roles are a major source of bias. Their support, however, was based upon inferences from studies which

measured subject roles indirectly (e.g., Cook et al., 1970; Sigall et al., 1970) or from studies having nothing to do with subject effects or subject roles (e.g., Stricker et al., 1967; Willis and Willis, 1970). The data from the factor analyses completed on 357 subjects in this study indicate that there is a factor structure conforming to the preconceived notions of constellations or clusters of subject attitudes about their own behavior while participating in research. The two factors, and the three subject roles inferred from these factors were not identical to those proposed by Weber and Cook (1973), but did, however, correspond in meaning to the polarities of subjects' motivation to cooperate or to not cooperate. These factors provide the basis for inferring that the Subject Role Measure does in fact measure subjects' disposition to adopt certain roles while participating in research.

This finding of a stable factor structure in subjects' responses to the Subject Role Measure is extremely important. The subject role concept can be investigated and considered, now, with more surety. Furthermore, there seems to be reasonable confidence in the possibility of direct measurement of these roles. No longer will the presence of subject roles' effects need to be inferred from dependent variables. Although factor analysis, as a statistical process, has disadvantages (e.g., lack of criterion matrix for this study), nevertheless the repeated replications of the factor structure are an important initial step in investigating with confidence the subject role effects.

One question raised by this study has to do with the specific roles that subjects may adopt. Weber and Cook (1973) identified four roles:

the Good, Faithful, Negativistic, and Apprehensive subjects. The two factor structure, replicated among samples, indicates three subject roles. The Cooperative subject is an aggregate of the Faithful subject's honesty in self-presentation and altruistic motives for research participation, and the Good subject's orientation toward an active problem-solving approach. The Negativistic subject is identical to the role as proposed by Weber and Cook (1973) and Masling (1966) - a subject who dislikes being in research, who is angered by demands put upon him, and who retaliates by providing contrary or nonsense responses (cf. Jourard, 1968). And the Obligated subject is a mixture of the Apprehensive subject's nervousness over being evaluated and the Good subject's orientation toward cooperation with the perceived demand characteristics in order to help produce the desired results. These three roles build on the four of Weber and Cook (1973) by detailing both desired behaviors on the part of the subject, and by suggesting probable attitudes of each role.

The question arises, however, when the five factor structure is considered. There, the dimensions of dependence-independence, suspicion-lack of suspicion, cooperation-noncooperation, and involvement-noninvolvement are clear. It is possible that there are more than three subject roles. These additional roles would be expected to vary on the previously mentioned dimensions, so that there may be a Suspicious subject or an Independent subject. An alternative is that these dimensions exist and vary across all the subject roles, perhaps along with other dimensions not yet identified. Another related question to be answered concerns the influence of these dimensions of subject

roles and the subject role adoption process. It is possible that these dimensions interact with experimental stimuli to produce in subjects various motivations to role adoptions or sensitivity to experimental cues.

The second major question is whether subject role adoption results in different behaviors on the part of the subjects. It is interesting and theoretically fruitful to measure subject roles, to have a deeper understanding of subject effects, and to be able to classify subjects along their scores on subject role scales. But the pragmatic question remains of the actual behavioral differences that these roles create. In this study, the data from the test experiment can only be regarded as suggestive because of the small sample size and the more liberal decision rules used to classify the subjects. But the results do not point to any reliable behavioral differences between subject role groups. It is only as these differences are found, and investigated within a wider variety of experimental paradigms, that belief in the subject roles and subject effects can be sustained.

Overall, however, the results of this study lend credence to further investigation of subject roles. There is particular interface between subject roles and ethical treatment of subjects. Much of the debate over ethical treatment of human subjects (e.g., Baumrind, 1975; Gergen, 1973) has been purported to rest in the reactions of the subjects. It has been asserted that subjects feel one way or the other about such practices as deception and debriefing with very little empirical data to inform the experimenter concerning what subjects actually do think and feel. The result has been a widespread adherence

to the "myth of uniformity" (Kiesler, 1966) among experimenters as it pertains to the modal psychology subject. What data there are (Farr and Seaver, 1975; Sullivan and Deiker, 1973) take the form of percentages of subjects who endorse particular practices. The reader is left with the uncomfortable suspicion of what the 13% who do not endorse deception, for example, are doing in his experiment. A thorough, empirically grounded, knowledge of subject roles can begin to respond to these doubts. If the answer is less than favorable, as for example with the 13% of disapproving subjects who are likely to be giving contrary responses, then the experimenter can take precaution against drawing false conclusions. Quasi-controls (Orne, 1970; Golding and Lichenstein, 1970) can be instituted, and ethical guidelines can be changed. But these changes will be made on the base of empirically supported understanding of the performance of subjects in experiments.

Limitations

Several limitations to this study should be noted. The major drawback was the limited sample size for the test experiment. This fact occasioned the use of a liberal decision rule with which to classify the experimental subjects rather than the conservative two standard deviation rule. It seems likely that the subjects classified by the one standard deviation rule were not as "pure" a sample, and therefore did not permit a strong test of the hypothesis of behavioral differences due to subject roles.

A second limitation concerns the time-bound nature of the study. Although testing of the subjects was distributed across an academic quarter for the test experiment, there were not enough subjects to

permit an analysis of subject role changes over time. The test-retest reliability coefficients indicated moderate stability of scores; it is possible that a strong stability was not achieved due to the lack of reliability of the instrument or to the lack of consistency of the concept over time. An interesting notion is that the subjects who sign-up for experimental participation at different times across the quarter vary in subject roles. It might be expected, for example, that Cooperative subjects would be early participants, and Negativistic subjects, later participants. It is also necessary to determine whether a subject's role is a function of the person or of the experimental environment. It seems likely that an interaction effect would exist, but no research supports either side of the issue. An understanding of subject roles, however, must include knowing the role adoption process and its antecedents.

The third limitation resides in the dyadic conformity test experiment. Most subjects in the debriefing session asserted they had no notion of what subject matter the experiment was investigating. About 25% of the subjects confessed awareness of a conformity in behavior theme. It seems likely that an experiment with less subtle demand characteristics would allow a stronger test of behavioral differences, for explicit expectations would force each subject to react to them in either an accepting or a rejecting manner.

Conclusions and Implications

The aim of this study, as stated in the introduction, was to confirm the possibility of direct subject role specification and to suggest further validation research. These goals appear to have been met.

The possibility of directly measuring a subject's likely experimental role has received qualified support. The Subject Role Measure, although containing error variance, appears to be based on concepts of subject behaviors and attitudes that cluster around identifiable subject roles. Subjects can be classified by the Subject Role Measure, and scores relating amount of role adoption can be assigned. In addition, there are many possibilities indicated for further research and validation. Foremost among these is a replication of the test experiment using more stringent classification criteria.

Alternative modes to strengthening the instrument are available. Items from various personality indicators (i.e., Introversion-Extroversion) could be included and analyzed as to their discriminant abilities. This approach would involve more of an indirect measurement. More items can be constructed in the mode of the items currently used, direct items that present desired behaviors or attitudes of the subject roles, and analyzed for their power to differentiate subject roles. Finally, subjects role-playing the three subject roles could be asked to generate behavioral or attitudinal opinions which could be transformed into items.

One additional implication of this study concerns the process of robust estimation (Andrews, Bickel, Hampel, Huber, Rogers and Tukey, 1972; Huber, 1972). The process of robust estimation, simply put, is that a sample may be trimmed of those subjects who do not belong in the population (Tukey, 1960). To accomplish this end, an experimenter needs reasonable grounds for determining a particular subject's lack of "fit" to the population in question. It is possible that the

Subject Role Measure could serve to indicate subjects whose extremes in role adoption render them inappropriate to consider. When trimming the sample of these subjects, an experimenter allows for a more robust estimation of the true effects.

The Subject Role Measure can be used to classify subjects prior to their participation in a variety of experiments, some involving more explicit demand characteristics, so that behavioral differences can be specified across a variety of experimental tasks and requirements. It would be hoped that in this manner, an accumulation of information concerning subjects' roles, and subject effects in experimentation, can accrue. The implications of the concept of subject roles can then be made more forcefully when based in data than when, as is now the case, asserted from a collection of opinions and inferences. If subjects do adopt roles when participating in experiments, and if these roles do bias results to the extent that subjects are reacting not only to experimental stimuli but also to their own needs and beliefs, then experimenters need to be infinitely more cautious when inferring conclusions from results and data. It seems important that the concept of subject roles be pursued so that the experimenter's ignorance of his subjects' beliefs, opinions, attitudes, and motivations does not stand in the way of empirically sound and scientifically valid research.

# APPENDIX A

## Original Items

1. During an experiment, my most important task is to be sure I carefully follow any instructions.

2. Even if I figure out what was really happening during an experiment, I shouldn't tell the experimenter about it.

3. While participating in research, I never really know how my behavior is being evaluated.

4. To be a "good" subject, I would help the experimenter get the research results that s/he needs.

5. In an experiment, I should avoid acting on the basis of any suspicions I might have about the experiment.

6. A lot of discomfort has been caused me because I was too cooperative in following instructions.

7. It isn't possible for the experimenter to figure out things about me unless I tell him/her directly about them.

8. It is important for me in an experiment to figure out how the experimenter wants me to act, so that I can choose whether or not to cooperate.

9. I shouldn't worry about how the experimenter thinks of me.

10. It isn't important that I guess at the real reason for the experiment.

11. I should be really independent to the point where I won't cooperate with the experimenter.

12. A good experimenter who knows a lot about people can tell what kind of person I am even though s/he may not spend much time with me.

13. While a subject, I should pay close attention to what the experimenter says and does.

14. While participating in a research study, I shouldn't give the experimenter the behavior or responses that s/he wants.

15. When I participate in research, I lose my rights as a person.

16. My true abilities can be seen as a result of my participation in just about any kind of research.

Appendix A Continued

17. While participating in an experiment, I should put everything out of my mind so as to be as honest and accurate as possible.

18. It is all right for me to try to mess up the experiment because I didn't really choose to be there.

19. I know what the experimenter wants to see, and give the experimenter those behaviors.

20. It is possible, and important, for me to guess at other reasons for the experiment besides the ones I am told by the experimenter.

21. It is very important for me to disregard any suspicions I might have about the experiment.

22. I should be very involved in and interested in the research study I am participating in.

23. I am evaluated by the experimenter on how cooperative I am during the experiment.

24. There is no real reason for me to resent having to participate in research.

25. If I figure out the real reason behind an experiment, I should pretend that I didn't find out.

26. I do not need to be really involved or interested in the research study I am participating in.

27. It isn't important to have the experimenter think well of me as a person.

28. It is okay for me to give an experimenter a response that is of no use to him/her.

29. As a subject, I should feel angry that I am being taken advantage of for no valid reason.

30. I should be a little bit nervous during an experiment because I never really know what the experimenter is thinking.

31. Helping the experimenter learn more about people is the main reason I participate in research studies.

32. If there is a disagreement between what I am told by the experimenter and what my suspicions are, I should act according to my suspicions since that is what the experimenter wants.

Appendix A Continued

33. When I participate in research, I am concerned about how I come across as a person, not just as a subject.

34. When I am participating in a research study, my behavior is being controlled by the experimenter.

35. In an experiment, I should try to act the way the experimenter wants me to.

36. If I cooperate in an experiment, I will be rated more favorably by the experimenter.

37. There is no need to "bend over backwards" to be cooperative during an experiment.

38. It isn't fair to expect me to give up all rights just to please the experimenter.

39. It is very important for me to work hard to be a "good" subject while participating in an experiment.

40. An experimenter can tell how well-adjusted I am by observing my behavior in the experiment.

41. One of the most important justifications for participating in research is to help the cause of science.

42. Sometimes my behavior in an experiment is evaluated on other dimensions than I am told about before the experiment.

43. I try very hard not to be influenced by anything I might have heard about an experiment.

44. I should be very assertive while participating in a research study.

45. While participating in a research study as a subject, I should always be very cooperative.

46. My major concern as a subject should be to give the experimenter the most honest portrayal possible of my usual behavior.

47. Sometimes I should choose to go against the experimental instructions.

48. How I act in an experiment can be used to evaluate my abilities.

Appendix A Continued

49. It doesn't matter what the experimenter tells me about the research study; I should control my behavior to be the kind of person I want to be during the experiment.

50. If I am participating in a research study, I should try to figure out what kind of behavior the experimenter wants.

51. I should be relatively uninvolved and apathetic about the experiment.

52. It is very important for me to present myself favorably in an experiment because experimenters are expert evaluators of ability and adjustment.

53. When I participate in research, I am really like a low-level employee; I have no real status.

54. It isn't important for me to know the "real" reason for the experiment.

55. A high degree of docility should characterize me when I am a subject in a research study.

56. My behavior is of interest to the experimenter only as it relates to the purpose of the research study.

57. It is very important for me to behave the way I usually do while I am participating in a research study.

58. I should not be too active a participant in research.

59. If I am an experimental subject, I need to follow any experimental instructions to the letter.

60. If I figure out the "real" reason for the experiment, I should give the experimenter the behaviors s/he wants to see.

# APPENDIX B

## Instructions to Subjects

Instructions:

The purpose of this survey is to learn your opinions about participating in research as a subject. On the following pages, there are a number of statements, each one followed by a scale that looks like this: SA A N D SD. Read each statement and evaluate how well it agrees or disagrees with your attitude toward participating in research.

If you strongly agree with the statement, if you feel that this statement represents an opinion you totally agree with, circle SA.

If you agree with the statement, if you think the statement is an attitude you hold most of the time, or you consider yourself in moderate agreement with the statement, circle A.

If you are neutral to the statement, if the attitude expressed is one you neither agree nor disagree with, circle N.

If you disagree with the statement, if you believe the statement is not an accurate representation of your feelings, if the statement is an opinion you are in moderate disagreement with, circle D.

If you strongly disagree with the statement, if you feel this statement represents an opinion you totally disagree with, circle SD.

Your first impression is most accurate, so work quickly but don't feel rushed. Please answer every item. Thank you for sharing your opinions.

# APPENDIX C

## Roleplaying Instructions

### "Good subject"

Instructions:

For this experiment, you will be asked to fill out a survey of your opinions about participating in research. When you are filling out the survey, you are to role-play a certain kind of person. Role-playing means that you simulate or pretend that you are someone you are not, and that you give answers to the survey that you think the person you are pretending to be would give. For this survey, you are being asked to do the following roleplay:

"You are a student, who in every experiment you are in, try very hard to give responses or answers that you think will help the experimenter; you look for little cues during an experiment from the experimenter or the other subjects to tell you how to act or what to say; your main concern is to be helpful and to aid the experimenter; you want very much to be cooperative and to be what you think a "good" subject is; you will work at giving the answers or responses you think the experimenter wants."

Take a minute to think about this kind of person, and imagine yourself as having the characteristics described. Then turn the page and read the instructions for filling out the survey. Remember that as you fill out the survey, you are to answer the items as you think the person described above would answer them because you are role-playing the person described; another way of thinking about roleplaying is that

Appendix C Continued

you are pretending to be the person described above as you fill out the survey. If you have any questions about these instructions, please ask them now.

"Faithful subject"

Instructions:

For this experiment, you will be asked to fill out a survey of your opinions about participating in research. When you are filling out the survey, you are to role-play a certain kind of person. Roleplaying means that you simulate or pretend that you are someone you are not, and that you give answers to the survey that you think the person you are pretending to be would give. For this survey, you are being asked to do the following roleplay:

"You are a student, who in every experiment you are in, try very hard to be a willing subject; you believe subjects should be cooperative and follow instructions very carefully; you further believe that your main concern is to be very accurate about the actions or verbal responses you give during the experiment; you want your experimental behavior to be as much as possible like your behavior outside the experiment; in addition, you will be careful to avoid acting on the basis of any suspicions you might have about the experiment."

Take a minute to think about this kind of person, and imagine yourself as having the characteristics described. Then turn the page and read the instructions for filling out the survey. Remember that as you fill out the survey, you are to answer the items as you think the person described above would answer them because you are role-playing the

Appendix C Continued

person described; another way of thinking about roleplaying is that you are pretending to be the person described above as you fill out the survey. If you have any questions about these instructions, please ask them now.

"Negativistic subject"

Instructions:

For this experiment, you will be asked to fill out a survey of your opinions about participating in research. When you are filling out the survey, you are to role-play a certain kind of person. Roleplaying means that you simulate or pretend that you are someone you are not, and that you give answers to the survey that you think the person you are pretending to be would give. For this survey, you are being asked to do the following roleplay:

"You are a student, who in every experiment you are in, are trying very hard to be uncooperative; you do not want to help the experimenter, but rather work against the experimenter; you will likely give answers that aren't true or that you know aren't useful to the experimenter; you also feel that there is no good reason for your being forced to participate in the experiment, and are angry enough to want to "screw up" the experiment; you go along with the experimenter because you have to, however, but you aren't going to give the experimenter the answers you think s/he wants."

Take a minute to think about this kind of person, and imagine yourself as having the characteristics described. Then turn the page and read the instructions for filling out the survey. Remember that as you fill

Appendix C Continued

out the survey, you are to answer the items as you think the person described above would answer them because you are role-playing the person described; another way of thinking about roleplaying is that you are pretending to be the person described above as you fill out the survey. If you have any questions about these instructions, please ask them now.

"Apprehensive subject"

Instructions:

For this experiment, you will be asked to fill out a survey of your opinions about participating in research. When you are filling out the survey, you are to role-play a certain kind of person. Roleplaying means that you simulate or pretend that you are someone you are not, and that you give answers to the survey that you think the person you are pretending to be would give. For this survey, you are being asked to do the following roleplay:

"You are a student, who in every experiment you are in, are very nervous about how you are being evaluated or judged; you believe that your behavior or responses in an experiment will indicate your abilities or emotional adjustment even though that is not the purpose of the experiment; you have a lot of incentive to present yourself as favorably as possible during the experiment since you believe the experimenter is a knowledgeable and accurate judge of people."

Take a minute to think about this kind of person, and imagine yourself as having the characteristics described. Then turn the page and read the instructions for filling out the survey. Remember that as you fill

Appendix C Continued

out the survey, you are to answer the items as you think the person described above would answer them because you are role-playing the person described; another way of thinking about roleplaying is that you are pretending to be the person described above as you fill out the survey. If you have any questions about these instructions, please ask them now.

# APPENDIX D

## Subject Role Measure

Instructions: The sentences below are statements of opinion or attitude about participating in psychological research as a subject. Read each statement and evaluate how well it agrees or disagrees with your attitude toward being a subject. Then mark the number of your response to the left of the statement. Your first impression is important, so work quickly, but not so fast that you feel rushed.

Use the following scale to respond to each item:

5 - STRONGLY AGREE (the statement expresses your feelings totally and you endorse it as an excellent representation of your attitude).

4 - AGREE (the statement expresses your feelings fairly accurately but not totally, and you would endorse it as a fair to good representation of your attitude).

3 - NEUTRAL (you are unsure of your stance on the opinion represented by the statement and you do not endorse it or reject it).

2 - DISAGREE (the statement expresses an opinion which is moderately contrary to your own and you would not endorse it as being a good representation of your opinion).

1 - STRONGLY DISAGREE (the statement is opposite to your feelings and under no circumstances would you endorse it).

_____ 1. During an experiment, my most important task is to be sure I carefully follow any instructions.

_____ 2. While participating in a research study, I should not give the experimenter the behavior or responses that s/he wants.

_____ 3. A good experimenter who knows a lot about people can tell what kind of person I am, even though s/he may not spend much time with me.

_____ 4. When I participate in research, I lose my rights as a person.

_____ 5. I should be very involved in and interested in the research study I am participating in.

_____ 6. In an experiment, I should try to act the way the experimenter wants me to.

Appendix D Continued

_____ 7. It is very important for me to work hard to be a "good" subject while participating in an experiment.

_____ 8. One of the most important justifications for participating in research is to help the cause of science.

_____ 9. There is no need to "bend over backwards" to be cooperative during an experiment.

_____10. When I participate in research, I am concerned about how I come across as a person, not just as a subject.

_____11. While participating in a research study as a subject, I should always be very cooperative.

_____12. It is very important for me to behave the way I usually do while I am participating in a research study.

_____13. A lot of discomfort has been caused me because I was too cooperative in following instructions.

_____14. I should not worry about how the experimenter thinks of me.

_____15. To be a "good" subject, I would help the experimenter get the results s/he needs.

_____16. I try very hard not to be influenced by anything I might have heard about an experiment.

_____17. I should be a little bit nervous during an experiment because I never really know what the experimenter is thinking.

_____18. It is okay for me to give an experimenter a response that is of no use to him/her.

_____19. I should be relatively uninvolved and apathetic about the experiment I am a subject in.

_____20. While a subject, I should pay close attention to what the experimenter says and does.

_____21. If I cooperate in an experiment, I will be rated more favorably by the experimenter.

_____22. While participating in an experiment, I should put everything out of my mind so as to be as honest and accurate as possible.

Appendix D Continued

_____23. In an experiment, I should avoid acting on the basis of any suspicions I might have about the experiment.

_____24. If I am an experimental subject, I need to follow any experimental instructions to the letter.

_____25. There is no real reason for me to resent having to participate in research.

_____26. Helping the experimenter learn more about people is the main reason I participate in research studies.

_____27. I do not need to be really involved in or interested in the research study I am participating in.

_____28. I know what the experimenter wants to see, and give the experimenter those behaviors.

_____29. An experimenter can tell how well-adjusted I am by observing my behavior in the experiment.

_____30. If I am participating in a research study, I should try to figure out what kind of behavior the experimenter wants.

_____31. As a subject, I should feel angry that I am being taken advantage of for no valid reason.

_____32. I should be really independent to the point where I won't cooperate with the experimenter.

_____33. If I figure out the "real" reason for the experiment, I should give the experimenter the behaviors s/he wants to see.

_____34. My major concern as a subject should be to give the experimenter the most honest portrayal possible of my usual behavior.

_____35. It is all right for me to try to mess up the experiment because I didn't really choose to be there.

_____36. It is important for me in an experiment to figure out how the experimenter wants me to act, so that I can choose whether or not to cooperate.

_____37. It is very important for me to disregard any suspicions I might have about the experiment.

_____38. It isn't fair to expect me to give up all rights just to please the experimenter.

Appendix D Continued

_____39. How I act in an experiment can be used to evaluate my abilities.

_____40. I should not be too active a participant in research.

_____41. Even if I figure out what was really happening during an experiment, I shouldn't tell the experimenter about it.

_____42. While participating in research, I never really know how my behavior is being evaluated.

_____43. It isn't important to have the experimenter think well of me as a person.

_____44. When I am participating in a research study, I am still in control of my behavior.

_____45. I should be an assertive person while participating in a research study.

# APPENDIX E

## Consent Form

To subjects: The experiment that you signed up for is the work that I am doing for my doctoral dissertation in psychology. I am studying the influence of attitudes that subjects have about being in research or their participation in experiments. This experiment is in two parts. The first part involves your filling out the attached questionnaire that asks your opinions about being a subject in psychological research. The second part of this experiment involves returning at a later date to be in an experiment. If you accept these conditions for participation in this research, please sign below. Thank you very much for your cooperation.

Betsy Mitchell

Name _____

Please turn the page and read the instructions for completing the questionnaire. If you have any questions, raise your hand and I will answer your questions as best I can.

# APPENDIX F

## Art Experience Inventory

Please circle the number of each statement that applies to you. Do not omit any items.

I have. . .

1. visited an art museum.
2. painted a picture with oils.
3. attended a concert by a symphony orchestra.
4. viewed a special showing at an art gallery.
5. bought original prints, lithographs, photographs.
6. learned to play an instrument.
7. seen an exhibit of modern sculpture.
8. learned to take and develop photographs.
9. taken an art class.
10. read a biography of a famous artist.
11. some knowledge of fine ceramics and porcelain.
12. familiarity with Dutch masters.
13. visited a well-known art museum such as the Metropolitan in New York or the Art Institute in Chicago.
14. watched an artist at work.
15. created an imaginative piece of writing.
16. read Japanese Haiku.
17. made a picture with pastels.
18. read a book or pamphlet explaining some famous picture.
19. sold some of my own works.
20. seen an exhibit of Impressionist paintings.
21. been to a ballet.

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22. listened to opera.

23. some familiarity with antiques.

24. seen an exhibit of Early American Folk art.

25. participated in a class of creative movement.

# BIBLIOGRAPHY


Abrahams, D. The effect of concern on debriefing following a deception experiment. Unpublished master's thesis, University of Minnesota, 1967.

Adelson, J. Personality. Annual Review of Psychology, 1969, 20, 217-252.

Aiken, E.G. and Lau, A.W. Response prompting and response confirmation: A review of recent literature. Psychological Bulletin, 1967, 68, 330-341.

American Psychological Association, Ethical standards for the conduct of research with human subjects. 1973.

Anastasi, A. Psychological testing. New York: McMillan Publishing Company, 1976 (4th edition).

Andrews, D., Bickel, P., Hampel, F., Huber, P., Rogers, W., and Tukey, J. Robust estimations of location: Survey and advances. Princeton, N.J.: Princeton University Press, 1972.

Argyris, C. Some unintended consequences of rigorous research. Psychological Bulletin, 1968, 70, 185-197.

Aronson, E. and Carlsmith, J. Experimentation in social psychology. In G. Lindzey and E. Aronson (Eds.), Handbook of social psychology. (Vol. 2). Reading, Mass.: Addison-Wesley, 1968.

Asch, S.E. Social psychology. Englewood Cliffs, N.J.: Prentice-Hall, 1952.

Baumrind, D. Some thoughts on the ethics of research: After reading Milgram's behavioral study on obedience. American Psychologist, 1964, 19, 421-423.

Baumrind, D. Principles of ethical conduct in the treatment of subjects. American Psychologist, 1971, 26, 887-896.

Baumrind, D. Metaethical and normative considerations covering the treatment of human subjects in the behavioral sciences. In E.C. Kennedy (Ed.), Human rights and psychological research. New York: Thomas Y. Crowell Co., 1975.

Bem, D.J. An experimental analysis of self-persuasion. Journal of Experimental Social Psychology, 1965, 1, 199-218.

Bem, D.J. An alternative interpretation of cognitive dissonance phenomena. Psychology Review, 1967, 74, 183-200.

Berg, I.A. The use of human subjects in psychological research. American Psychologist, 1954, 9, 108-111.

Berkowitz, L. Reporting an experiment: A case study in leveling, sharpening, and assimilation. Journal of Experimental Social Psychology, 1971, 7, 237-243.

Berkowitz, L. and LePage, A. Weapons as aggression-eliciting stimuli. Journal of Personality and Social Psychology, 1967, 7, 202-207.

Berscheid, E., Baron, R., Dermer, M., Libman, M. Anticipating informed consent; an empirical approach. American Psychologist, 1973, 28, 913-925.

Bowerman, W. The effectiveness of debriefing: Lingering doubts. Psychological Reports, 1977, 40,

Brock, T.C. and Becker, L.A. "Debriefing" and susceptibility to subsequent experimental manipulations. Journal of Experimental Social Psychology, 1966, 2, 314-323.

Bryan, J.H. and Lichenstein, E. Effects of subject and experimenter attitudes in verbal conditioning. Journal of Personality and Social Psychology, 1966, 3, 182-189.

Campbell, D.T. Prospective: Artifact and control. In R. Rosenthal and R. Rosnow (Eds.), Artifact in behavioral research. New York: Academic Press, 1969, pp. 351-382.

Carlson, R. Where is the person in personality research? Psychological Bulletin, 1971, 75, 203-219.

Cohen, J. Statistical power analysis for the behavioral sciences. New York: Academic Press, 1969.

Cook, S.W., Hicks, L.H., Kimble, G.A., McGuire, W.J., Schoggen, P.H., and Smith, M.B. Ethical standards for research with human subjects (draft). APA Monitor, 1972, 3, i-xix.

Cook, T.D., Bean, J.R., Calder, B.J., Frey, R., Krovetz, M., and Reisman, S.R. Demand characteristics and three conceptions of the frequently deceived subject. Journal of Personality and Social Psychology, 1970, 14, 185-194.

Darroch, I. and Steiner, R. Role-playing: An alternative to laboratory research? Journal of Personality, 1970, 30, 302-311.

Doherty, M. and Walker, R. The relationship of personality characteristics, awareness, and attitudes in a verbal conditioning situation. Journal of Personality, 1966, 34, 504-515.

Doob, A.N. and Gross, A.E. Status of frustrator as an inhibitor of horn-honking responses. Journal of Social Psychology, 1968, 76, 213-218.

Edwards, A.L. Techniques of attitude scale construction. New York: Appleton-Century-Crofts, Inc., 1957.

Farr, J.L. and Seaver, W.B. Stress and discomfort in psychological research; Subject perceptions of experimental procedures. American Psychologist, 1975, 30, 770-773.

Fillenbaum, S. Prior deception and subsequent experimental performance: The "faithful" subject. Journal of Personality and Social Psychology, 1966, 4, 532-537.

Fillenbaum, S. and Frey, R. More on the "faithful" behavior of suspicious subjects. Journal of Personality, 1970, 38, 43-51.

Forward, J., Canter, R. and Kirsch, N. Role-enactment and deception methodologies: Alternative paradigms? American Psychologist, 1977, 31, 595-604.

Freedman, J.L. Role playing: Psychology by consensus. Journal of Personality and Social Psychology, 1969, 13, 107-114.

Freedman, J.L., Wallington, S.A., and Bless, E. Compliance without pressure: The effect of guilt. Journal of Personality and Social Psychology, 1967, 7, 117-124.

Golding, S.L. and Lichenstein, E. Confession of awareness and prior knowledge of deception as a function of interview set. Journal of Personality and Social Psychology, 1970, 14, 213-223.

Greenberg, M.S. Roleplaying: An alternative to deception? Journal of Personality and Social Psychology, 1967, 7, 152-157.

Holland, C.H. Sources of variance in the experimental investigation of behavioral obedience. Unpublished doctoral dissertation, University of Connecticut, 1967.

Holmes, D.S. Debriefing after psychological experiments; I. Effectiveness of postdeception dehoaxing. American Psychologist, 1976, 31, 858-867. (a)

Holmes, D.S. Debriefing after psychological experiments; II. Effectiveness of postexperimental desensitizing. American Psychologist, 1976, 31, 868-875. (b)

Holmes, D.S. and Bennett, D.H. Experiments to answer questions raised by the use of deception in psychological research. Journal of Personality and Social Psychology, 1974, 29, 358-367.

Hood, T.C. and Back, K.W. Self-disclosure and the volunteer: A source of bias in laboratory experiments. Journal of Personality and Social Psychology, 1971, 17, 130-136.

Horowitz, I.A. Effects of volunteering, fear arousal, and number of communications on attitude change. Journal of Personality and Social Psychology, 1969, 11, 34-37.

Horowitz, I.A. and Rothschild, B.H. Conformity as a function of deception and roleplaying. Journal of Personality and Social Psychology, 1970, 14, 224-226.

Huber, P.J. The 1972 Wald lecture: Robust statistics, a review. Annals of Mathematical Statistics, 1972, 43, 1041-1067.

Insko, C.A. and Oaks, W.F. Awareness and the "conditioning" of attitudes. Journal of Personality and Social Psychology, 1966, 4, 487-496.

Jourard, S.M. Disclosing man to himself. Princeton, N.J.: D. Van Nostrand, 1968.

Keisner, R.H. Debriefing and responsiveness to overt experimenter expectancy cues. Journal of Social Psychology, 1971, 84, 65-71.

Kelman, H.C. Human use of human subjects: The problem of deception in social psychology experiments. Psychological Bulletin, 1967, 67, 1-11.

Kennedy, E.C. (Ed.) Human rights and psychological research. New York: Thomas Y. Crowell Co., 1975.

Korth, B. and Tucker, L.R. Tucker factor - comparison procedure. Psychometrika, 1976, 41, 531-536.

Lerner, M. and Simmons, C. Observer's reaction to the "innocent victim": Compassion or rejection? Journal of Personality and Social Psychology, 1966, 4, 203-210.

Levy, L.H. Awareness, learning, and the beneficient subject as expert witness. Journal of Personality and Social Psychology, 1967, 6, 365-370.

Likert, R. The method of constructing an attitude scale. In G.M. Maranell (Ed.), Scaling: A sourcebook for behavioral scientists. Chicago: Aldine, 1974.

Masling, J. Role-related behavior of the subject and psychologist and its effects upon psychological data. Nebraska Symposium of Motivation, 1966, , 67-103.

McGuire, W.J. Suspiciousness of experimenter's intent. In R. Rosenthal and R. Rosnow (Eds.), Artifact in behavioral research. New York: Academic Press, 1969.

Milgram, S. Behavioral study of obedience. Journal of Abnormal and Social Psychology, 1963, 67, 371-378.

Milgram, S. Some conditions of obedience and disobedience to authority. Human Relations, 1965, 18, 57-76.

Miller, A.G. Roleplaying: An alternative to deception? A review of the evidence. American Psychologist, 1972, 27, 623-635.

Mitchell, E.V. Roleplaying as alternatives to deception in psychological experiments. Unpublished master's thesis, The Ohio State University, 1975.

Montanelli, R.G. and Humphreys, L.G. Latent roots of random data correlation matrices with squared multiple correlations on the diagonal: A Monte Carlo study. Psychometrika, 1976, 41, 341-348.

Neale, J.M. and Leibert, R.M. Science and behavior: An introduction to methods of research. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

Orne, M.T. On the social psychology of the psychology experiment: With particular reference to demand characteristics and their implications. American Psychologist, 1962, 17, 776-783.

Orne, M.T. Hypnosis, motivation and the ecological validity of the psychological experiment. Nebraska Symposium on Motivation, 1970, 18, 187-265.

Page, M.M. Modification of figure-ground perception as a function of awareness of demand characteristics. Journal of Personality and Social Psychology, 1968, 9, 59-66.

Page, M.M. Social psychology of a classical conditioning of attitudes experiment. Journal of Personality and Social Psychology, 1969, 11, 177-186.

Page, M.M. Effects of evaluation apprehension on cooperation in verbal conditioning. Journal of Experimental Research in Personality, 1971, 5, 85-91.

Page, M.M. and Scheidt, R.J. The elusive weapons effect: Demand awareness, evaluation apprehension, and slightly sophisticated subjects. Journal of Personality and Social Psychology, 1971, 20, 304-318.

Penner, D.D. and Patten, R.L. Self persuasion: Fact or artifact. Paper presented at the meeting of The Midwest Psychological Association, Chicago, May, 1968.

Rapaport, R. Expectancy: A way of thinking about a general construct. Unpublished paper, The Ohio State University, 1976.

Riecken, H.W. A program for research on experiments in social psychology. In N.F. Washburne (Ed.), Decisions, values, and groups. Vol. II. New York: Pergamon Press, 1962.

Ring, K. Experimental social psychology: Some sober thoughts about some frivolous values. Journal of Experimental Social Psychology, 1967, 3, 113-123.

Rosenberg, M.J. When dissonance fails: On eliminating evaluation apprehension from attitude measurement. Journal of Personality and Social Psychology, 1965, 1, 18-42.

Rosenberg, M.J. The conditions and consequences of evaluation apprehension. In R. Rosenthal and R. Rosnow (Eds.), Artifact in behavioral research. New York: Academic Press, 1969.

Rosenthal, R. On the social psychology of the psychological experiment: The experimenter's hypothesis as an unintended determinant of experimental results. American Scientist, 1963, 51, 268-283.

Rosenthal, R. Experimenter effects in behavioral research. New York: Appleton-Century-Crofts, 1966.

Rosenthal, R. and Rosnow, R.L. The volunteer subject. In R. Rosenthal and R. Rosnow (Eds.), Artifact in behavioral research. New York: Academic Press, 1969, pp. 59-118.

Ross, L., Lepper, M., and Hubbard, M. Perseverance in self-perception and social perception: Biased attributional processes in the debriefing paradigm. Journal of Personality and Social Psychology, 1975, 32, 880-892.

Rubin, Z. and Moore, J.C. Assessment of subjects' suspicions. Journal of Personality and Social Psychology, 1971, 17, 163-170.

Schachter, S. The psychology of affiliation; Experimental studies of the sources of gregariousness. Stanford: Stanford University Press, 1959.

Schultz, D.P. The human subject in psychological research. Psychological Bulletin, 1969, 72, 214-228.

Seeman, J. Deception in psychological research. American Psychologist, 1964, 19, 420-423.

Sigall, H., Aronson, E., and Van Hoose, T. The cooperative subject: Myth or reality? Journal of Experimental Social Psychology, 1970, 6, 1-10.

Silverman, I. Motives underlying the behavior of the subject in the psychological experiment. Paper read at American Psychological Association, Chicago, 1965.

Silverman, I. Role-related behavior of subjects in laboratory studies of attitude change. Journal of Personality and Social Psychology, 1968, 8, 343-348.

Silverman, I., Shulman, A.D., and Wiesenthal, D.L. Effects of deceiving and debriefing psychological subjects on performance in later experiments. Journal of Personality and Social Psychology, 1970, 14, 203-212.

Simons, C.W. and Piliavin, J.A. Effect of deception on reactions to a victim. Journal of Personality and Social Psychology, 1972, 21, 56-60.

Stricker, L.J. The true deceiver. Psychological Bulletin, 1967, 68, 13-20.

Stricker, L.J., Messick, S., and Jackson, D.N. Suspicion of deception: Implications for conformity research. Journal of Personality and Social Psychology, 1967, 5, 379-389.

Sullivan, D.S. and Deiker, T.E. Subject-experimenter perceptions of ethical issues in human research. American Psychologist, 1973, 28, 487-491.

Titchener, E.D. Prolegomena to a study of introspection. American Journal of Psychology, 1912, 23, 427-448.

Tukey, J.W. A survey of sampling from contaminated distributions. In I. Olkin (Ed.), Contributions to probability and statistics: Essays in honor of Harold Hotelling. Stanford: Stanford University Press, 1960.

Valins, S. Cognitive effects of false heart-rate feedback. Journal of Personality and Social Psychology, 1966, 4, 400-408.

Vinacke, W.E. Deceiving experimental subjects. American Psychologist, 1954, 9, 155.

Wahl, J.M. Role playing versus deception: Differences in experimental realism as measured by subjects' involvement and level of suspicion. Unpublished doctoral dissertation, University of Oregon, 1972.

Walker. Review of subject roles. Cited in C. Hendricks, Artifact in social research. Unpublished paper, Kent State University, 1976.

Walster, E., Berscheid, E., Abrahams, D., and Aronson, V. Effectiveness of debriefing following deception experiment. Journal of Personality and Social Psychology, 1967, 4, 371-380.

Weber, S.J. and Cook, T.D. Subject effects in laboratory research. Psychological Bulletin, 1972, 77, 273-295.

Wheeler, L. Toward a theory of behavioral contagion. Psychological Review, 1966, 73, 179-192.

Willis, R.H. Social influence: Information processing and net conformity in dyads. Psychological Reports, 1965, 17, 147-156.

Willis, R.H. and Willis, Y.A. Role playing versus deception: An experimental comparison. Journal of Personality and Social Psychology, 1970, 16, 472-477.

Wolfensberger, W. Ethical issues in research with human subjects. Science, 1967, 155, 47-51.