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AUTHOR	Triandis, Harry C.; And Others
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ABSTRACT

In order to choose among several strategies of cross-cultural training, a standard experimental paradigm is needed to inexpensively generate reliable and valid data. The research presented in this document provides what appears to be such a paradigm. It involves the presentation of intercultural conflict to subjects, under standardized conditions. The responses that the subjects make can be analyzed to determine the effects of different kinds of training on modifications of such responses. This study has several foci: (1) to explore the importance of level of abstraction of disagreement on interpersonal attraction; (2) to examine the importance of the sequence of agreements and disagreements; and, (3) to explore a paradigm which can be used in comparisons of intercultural training. The elements of subjective culture may be organized according to their level of abstraction: At the highest level there are values and at the lowest level there are specific beliefs about the means for reaching specific goals. Intermediate between these two levels are other elements of subjective culture such as norms and roles. One reason for the possibly greater importance of the more abstract of the disagreements is that when there is a disagreement at a high level of abstraction, it automatically implies disagreement at all other levels. (Author/JM)

DEPARTMENT OF PSYCHOLOGY

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

CHAMPAIGN, ILLINOIS 61820

Illinois Studies of the Economically Disadvantaged

LEVEL OF ABSTRACTION OF DISAGREEMENTS AS A DETERMINANT OF CROSS-CULTURAL INTERPERSONAL PERCEPTION

Harry C. Triandis, David Weldon

and

Tonya Gwynn

University of Illinois

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Harry C. Triandis
Principal Investigator

Preface

This report is part of a series which is concerned with the economically disadvantaged. We have shown, thus far, and will continue showing in reports to be published shortly, that economic disadvantages are associated with and presumably create characteristic ways of perceiving and thinking about the social environment which are different from non-disadvantaged groups. Such differences create barriers in communication between a disadvantaged employee and his supervisor, his fellow employees and his subordinates. Such barriers make it more difficult for such an employee to hold a job. If we are to rehabilitate such an employee we must train both the employee and the people in his job environment in ways which will reduce such barriers.

The present study (a) presents a new way of studying the impact of disagreements on interpersonal relations, (b) assesses the importance of different kinds of disagreements on such relations, and (c) examines the importance of different sequences of agreements/disagreements on such relations.

On (a) it shows that our procedures are exceptionally sensitive, and hence can be used for the careful and detailed analysis of interpersonal perception. This finding means that we can do quite economically certain kinds of studies needed for the optimal construction of "culture assimilators" (devices for training members of one culture to interact effectively with members of another culture) in laboratory settings. On (b) it confirms the findings of Technical Report No. 12, which showed that the level of abstraction of a disagreement was an important variable and hence people should be trained to discuss disagreements at low levels of abstraction in the context of agreements at higher levels of abstraction. This experiment is particularly interesting because it uncovered exceptionally high degrees of sensitivity of blacks to "role disagreements," suggesting that much of our training must focus on dealing with this cultural difference. On (c) it shows that even one disagreement, at a relatively low level of abstraction, can imply severe interpersonal tension for white subjects. On the other hand, blacks react to situations in which there is only agreement as though they are exceptionally formal or "phony". Again, this suggests that we must adopt particular forms of training.

Thus, the information contained in this report is useful in constructing particular kinds of cultural training materials, which will help black-white interaction in job settings.

Harry C. Triandis

LEVEL OF ABSTRACTION OF DISAGREEMENTS AS A DETERMINANT OF CROSS-CULTURAL INTERPERSONAL PERCEPTION[1]

Harry C. Triandis, David Weldon and Tonya Gwynn

University of Illinois

When individuals raised in two different cultures interact, differences in the way they perceive their social environment are likely to lead to disagreements. The effects of these disagreements will be reflected particularly clearly on interpersonal perception indices.

The importance of interpersonal agreement as a determinant of interpersonal attraction has been discussed for a long time. Well-known theoretical models, such as Newcomb's ABX (1953, 1956), Heider's Balance (1958), and Byrne's (1961, 1969), are but a few of the models which predict an association between similarity and interpersonal attraction. Triandis (1959) showed that cognitive similarity is a determinant of both interpersonal communication efficiency and interpersonal attraction in an industrial setting.

Most of the studies mentioned above have focused specifically on attitudes. However, many other elements of subjective culture, that is, of a cultural group's characteristic way of perceiving its social environment, are likely to influence interpersonal attraction when members of two cultures interact. Triandis, Vassiliou, Tanaka and Shanmugam (1972) have presented a theoretical framework for the analysis of subjective culture, procedures for the measurement of many of the elements of subjective culture, and

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empirical examples of cross-cultural investigations in which these elements were studied. Among the most significant elements are associations, attitudes, beliefs, concepts, evaluations, expectations, norms, role perceptions, stereotypes and values. Such an alphabetical listing avoids the issue of which of these elements is most critical. For example, if two individuals disagree in the way they evaluate a particular object or on who should do a particular job, which disagreement is going to produce more negative affect?

When the question is stated in this general form it is almost impossible to answer. However, the elements of subjective culture may be organized according to their level of abstraction. At the highest level there are values and at the lowest level there are specific beliefs about the means for reaching specific goals. Intermediate between these two levels are other elements of subjective culture such as norms and roles. It can be said, then, that as a first approximation, in an attempt to sample elements of subjective culture at different levels of abstraction, we might consider values, norms, roles and facilities. For example, a disagreement at the level of values might be a disagreement on whether cleanliness per se is a "good thing;" a disagreement at the level of norms might be a disagreement in whether a household's dishes should be washed after every meal; a disagreement at the level of roles might involve disagreement on who should wash the dishes; while a disagreement at the level of facilities might be a disagreement on how to wash the dishes.

Smelzer (1963), when discussing intergroup conflict, has proposed that disagreement at the level of values is more serious than at the level of norms, which in turn is more important than disagreement at the level of roles, and the latter is more important than disagreement at the level of facilities. One reason for the greater importance of the more abstract of the disagreements

is that when there is a disagreement at a high level of abstraction it automatically implies disagreement at all other levels. For example, if there is disagreement on whether cleanliness is a good thing, the issue of whether or not dishes are to be washed, who should wash them, and how they are to be washed are no longer relevant since the two individuals do not agree that washing is desirable.

Common goals are probably central to the development of interpersonal attraction. Common values often suggest common goals. The failure of the ABX Model and other balance models to predict the obvious dislike between two males who want to marry the same girl implies that it is not the agreement on how the attitude object is to be evaluated, as such, that is critical, but the relationship between the individuals. Interdependent relationships are those in which when one individual reaches his goal, the other one reaches it also; such relationships lead to interpersonal attraction, whereas, contrient relationships are those in which when one individual reaches his goal, the other by definition cannot reach his. Contrient relationships lead to interpersonal hostility. The argument here is that interdependence vs. contrience is the basic issue. Agreements or disagreements on values, norms, roles and facilities are epiphenomena of this more basic process. Such agreements or disagreements are often used as indices or "clues" of a real or potential interdependent or contrient relationship.

Disagreements at the more abstract levels are more important because they imply a more fundamental dislocation of interdependence. Specifically, disagreement on values may indicate that the two individuals have very different goals; a disagreement on norms may indicate that the behavior of one individual will not be consistent with the behavior of the other; a disagreement on roles indicates poor coordination in reaching goals; and a

disagreement on facilities implies the use of different means to reach the common goals. In short, disagreements at the levels of facilities and roles imply a common goal and hence a certain amount of interdependence, while disagreements at the levels of values and norms do not have such implications and hence might involve contrience or, as a minimum, divergence of goals.

This analysis would then suggest that the impact of disagreements at a high level of abstraction will be greater than disagreements at low levels of abstraction.

At each level of abstraction the disagreements may be on issues which are important or unimportant, as defined by the subjects. It seems obvious that disagreement on important issues will have a greater effect on attraction than disagreement on unimportant issues, yet the empirical support for this obvious relationship is very weak. Byrne (1969), for instance, reviews studies by Byrne and Nelson (1964, 1965) in which topic importance and agreement-disagreement were manipulated in an orthogonal design. Subjects responded to others who were on one level of disagreement in the first study, but all four levels of disagreement in the second study. Neither of these two studies showed an effect of the importance of the disagreement on attraction. More recently, however, Byrne, London, and Griffitt (1968) and Clore and Baldridge (1968) found that if a stranger expresses opinions on items heterogeneous on importance and if the similarity level is at an intermediate point between .00 and 1.00, then items of differential importance affect attraction differentially. Byrne (1969) concludes that the importance of attitudinal topics is a relevant variable only under quite specific conditions. However, it should be remembered that the topics selected varied in importance within only one element of subjective culture, namely, attitudes.

There is, as yet, no information on variations involving different levels of abstraction of the elements of subjective culture. The present investigation was undertaken to explore this issue.

In studies of the effects of disagreement on interpersonal attraction we are faced with several methodological problems. As Stapert and Clore (1969) have stated, the way the data are collected is very important. Different results appear to be obtained when (1) a person is exposed to others who agree or disagree with him, with the disagreer or agreer being the same or a different person; (2) when measurements of attraction are taken after each trial or at the end of the experiment; (3) when the agreement or disagreement are on the same or different issues.

The sequence with which disagreements and agreements are presented seems to be critical in the determination of the attraction that will be experienced. There is a good deal of evidence that agreement after a series of disagreements produces more attraction than a series of agreements. For example, Worchel and Shuster (1966) found that attraction ratings of later agreers are higher than attraction ratings of agreers who follow other agreers. For example, in the AAAA condition the last person was evaluated less positively than in the DDDA condition. A similar effect was observed by Aronson and Linder (1965) in a situation involving formal and informal personal evaluations. In most of these studies, there were several agreeing or disagreeing individuals. In our present study we had only one individual who disagreed or agreed on different issues. One question of interest is whether an agreement at the level of values after disagreements at the levels of facilities, roles and norms will produce more attraction than a series of agreements at the levels of facilities, roles, norms and values. If the sequence in which the agreement occurs after a series of disagreements is seen as involving more interpersonal

attraction than the series in which only agreements occurred, one reasonable interpretation is that disagreements are arousing and this arousal interacts with agreement during the last phase of the experience to produce unusually high levels of attraction. Such an interpretation can be derived from the work of Byrne and Clore (1967) and Stapert and Clore (1969).

An additional concern for the influence of serial position on attraction ratings stems from our interest in the development of "culture assimilators." Culture assimilators are programmed learning devices designed to teach a member of one culture the critical features of another culture. It is assumed that if a person is trained to understand the critical values, norms, roles, etc., which characterize another culture, he will be able to make more accurate attributions when he observes the behavior of members of this other culture. The argument is that in intercultural encounters members of one culture tend to attribute the wrong traits or characteristics to members of the other culture on the basis of specific behaviors that they observe (Davidson & Feldman, 1971). One of our tasks in cross-cultural training is to teach individuals to improve their attributions. For example, when a white foreman tells a black machinist to clean the floor around his machine, the black machinist may attribute racism to the white foreman; or when the black worker has difficulty getting to his job because of a poor transportation system, the white foreman may attribute laziness or unreliability to the black worker (Malpass & Symonds, 1971). A culture assimilator could modify the behavior of the foreman, as well as the perceptions of the black worker. For example, the white foreman may be told of the extreme sensitivity of black workers to orders to clean up. If that is explained, then the order might be given in a different form. For example, the foreman might say, "Please observe that all machinists here clean the

floor." This would direct the black worker to observe that the white machinists are cleaning their workplaces and in the context of such an observation, the foreman's order would probably not be perceived as racism.

The kind of training suggested above is an example of what Triandis (1968) called cognitive training. However, at least three other major categories of training can be described. Affective training, might involve maximizing the opportunity for members of culture X to have pleasant experiences with or in the presence of members of culture Y, or it might involve classical conditioning procedures in which members of culture X learn to associate positive affect to behaviors characteristic of members of culture Y. Behavioral training might involve placing an individual in an environment in which he gets rewarded for certain kinds of behaviors. This can be accomplished by moving the individual to an environment in which group members have different norms, or to one in which his roles are re-defined. Finally, tolerance for discrepancy training is one in which the individual learns to appreciate differences in behavior and to feel tolerant, or even pleased, when the other person behaves in unexpected ways.

Each of these strategies of cross-cultural training implies a different training program. We do not know if any of the above mentioned strategies is effective, or if all of them are effective. Furthermore, if they are effective, we do not know if they are differentially effective. To explore such questions we need a standard experimental paradigm, which can inexpensively generate reliable, and valid data.

The present paper presents what appears to be such a paradigm. It involves the presentation of intercultural conflict to subjects, under standardized conditions. The responses that the subjects make can be analyzed to determine the effects of different kinds of training on modifications of

such responses. Thus, a broad range of important problems concerning intercultural training can become accessible to experimental studies. For example, to return to cognitive training, while it is intuitively obvious that presenting cultural information of the sort described above would be beneficial, there are some major problems. Specifically, if we present a lot of information showing that the two cultures are different, we may increase hostility or increase the clarity of stereotyping, making uncomplimentary stereotypes sharper. On the other hand, if we emphasize only the similarities between the cultures, we will be creating an unrealistic image of the intercultural relationship which is likely to reduce the credibility of the culture assimilator. If we can extrapolate from the previously reviewed studies of the effects of sequence of agreements and disagreements, it would appear that the proper structure of culture assimilators would be one in which all of the cultural disagreements are presented first, followed by all the cultural agreements. It is here assumed, also, that in the optimal culture assimilators the percentages of agreements and disagreements should be an accurate reflection of the percentages of agreements and disagreements between the elements of subjective culture of the two cultural groups. This conception will obviously have to be tested against other organizations of the assimilator to determine the optimal sequence of presentation.

The present study, then, has several foci: (1) to explore the importance of level of abstraction of disagreement on interpersonal attraction; (2) to examine the importance of the sequence of agreements and disagreements and (3) to explore a paradigm which can be used in comparisons of intercultural training.

A word about the dependent variables used in this study is now appropriate. Triandis (1967) has presented evidence that interpersonal

attitudes are multi-dimensional. Specifically, it is important to measure, independently, a person's (P) evaluation of another (O), as well as P's perception of the potency and activity levels of O. In addition, researchers should independently measure the extent to which P is willing to respect, and to be intimate, friendly, hostile and supraordinate in relation to O. This means that eight dimensions of interpersonal perception should be measured independently and factor analyzed, before analyses of variance are performed to show the effects of independent variables, such as the level of abstraction of the disagreement, on these dependent variables.

When several dependent variables are utilized we may observe that independent variables may have effects on only one of them, or have a widespread effect on all of them. The first hypothesis of the present study was that the higher the level of abstraction of the disagreements, the more widespread would be the effects on the various dimensions of social perception. Specifically, disagreement in values would affect a greater number of dimensions than disagreement on roles or facilities. The second hypothesis was that disagreement at the higher levels of abstraction will generally have greater effects on social perception scores than disagreements at lower levels of abstraction. Specifically, disagreement in values will lead to larger differences on each dimension on which there is a difference.

The third hypothesis was that disagreements at the lower levels of abstraction will be projected to higher levels. This means that one disagreement at the level of facilities will be about as damaging as four disagreements at the levels of facilities, roles, norms and values. In short, we predict equally poor social perception reactions in the case of a single disagreement at the level of facilities and the case of multiple disagreements.

The fourth hypothesis was that disagreement between two individuals of the same culture will control more variance in interpersonal perception scores than disagreement between two individuals from different cultures.

Specifically, a given disagreement between two whites will imply more negative interpersonal perception scores than the same disagreement occuring between a black and a white. This hypothesis has much in common with the findings by Taylor and Metee (1971) who report that an obnoxious (read: disagreeing) similar other is disliked more than an obnoxious dissimilar other.

The fourth hypothesis is qualified for the different dependent variables used in this study. Previous research, reviewed by Triandis (1967), showed that differences in race control more variance on certain dimensions of behavioral intents, such as "exclude from marital and neighborhood arrangements," while differences in belief, i.e., disagreements, control more variance on formal behaviors and general evaluation. We, therefore, expect that the fourth hypothesis will be supported for the evaluative and formal dimensions of interpersonal attitudes, while the reverse will be true for the hostility and superordination dimensions.

Experiment I

The first experiment was designed to test the methodology that we were to use in the second experiment. We wanted to use a method that would measure with sensitivity interpersonal reactions to interpersonal disagreements.

We decided to employ a combination of slides and tape recordings, and responses by subjects to a multi-faceted questionnaire. Our hope was that the procedure would prove sensitive and would give results that make sense. We wanted to know also the effects of using different kinds of experimenters on our results, as well as on the consistency of results across our multi-faceted dependent variables.

Since our interest was to employ the same methodology in several experiments--e.g., to test the effects of different kinds of cultural training on interpersonal perception--it was desirable to have a rather complete

exploration of this methodology. In addition, in this experiment we were concerned with black and white perceptions of a particular type of interpersonal interaction. Specifically, anectotal observations and critical incidents (Malpass & Symonds, 1971) have suggested that a problem in black-white interactions concerns the "asking for help" domain of interpersonal relations. It was reported that white supervisors complain that blacks either do not ask for help, when it would be appropriate for them to do so, or ask for help too frequently, so that they become a "nuisance." This would suggest the existence of cultural differences in the way asking for help behavior is perceived, as well as in the perceived appropriateness of white reactions to a black asking for help. Thus, the final purpose of this experiment was to explore such cultural differences.

Method

Experiment I

Subjects. The subjects were 80 white and 80 black male volunteers who were paid for their participation. All Ss were from the university community; the majority of the blacks were participants in a university program designed to bring young persons from very disadvantaged backgrounds to the university. (Variable 1: black-white Ss).

Stimuli. Four conversations were developed between two individuals in a factory setting. The fictitious names Jack and George were used for the two participants. Two contrasting role pairs were used in the conversations--foreman-worker and worker-worker (Variable 2). In the conversations, Jack was always white and George was either black or white (Variable 3). In the foreman-worker role pair, Jack wore foreman's clothing and George wore worker's clothing. In the worker-worker role pair, both Jack and George wore worker's clothing.

The four conversations were constructed as follows: (1) George approached Jack and asked, "Jack, I think I'm going to have some trouble figuring out these parts, do you think you could help me?" (2) Jack gave four answers depending on the conversational condition. The conditions were formed by manipulating two dimensions--warm-cold (Variable 4), and controlling-autonomous (Variable 5). Thus Jack's answers were as follows:

(Warm-autonomous): "I'd like to, George, but you need to have more confidence in yourself. I think you can actually do that job by yourself. Why don't you try and then if you have trouble, I'll give you a hand."

(Warm-controlling): "I'll help you, George, but you'll have to pay attention and do exactly what I tell you. The last time I tried to help you, you didn't follow my advice and you made a real mess."

(Cold-autonomous): "I'm too busy, George. You'll have to find somebody else. Anyway, I think you can actually do that job by yourself. Why don't you try--you might be surprised."

(Cold-controlling): "I'm too busy, George, you'll have to find somebody else. Besides, you usually don't pay attention to what I tell you anyway and you make a real mess."

The conversations were carefully controlled for tone, syntax and grammar across all conditions, since previous research (Triandis, Loh & Levin, 1966) had indicated that grammar influences interpersonal attraction.

The conversations were then recorded on a master tape using a Sony TC-6300 stereo tape recorder. Professional actors were used to record the conversations. Since each S was to receive all four conversations, four separate orders of the conversations were generated using a latin square design.

These orders were then transferred to separate tape cassettes for use on a Bell and Howell Model 337 stereo cassette recorder. Thus, 16 separate sets of the four conversations were generated. Each set corresponded to a cell in a 2 x 2 x 4 classification (degree of warmth x degree of freedom x conversation order) of the conversations.

Finally, the conversations between Jack and George were photographed with a Nikon F camera with an f1.4 lens at an approximate distance of 10 ft. from the actors, using Ectachrome color reversal film. Three transparencies were taken of each conversation between Jack and George. The first was a neutral pose showing profiles of the two actors. Jack was always the person on the left in every condition of the design. The second transparency was taken from a position behind Jack showing the expression on George's face as he requested Jack's help. The third transparency was taken from a position behind George showing Jack's reply. All transparencies were taken in the shop area on the University of Illinois campus. When Jack was a foreman, he wore a suit coat and tie. In all other conditions, both actors wore t-shirts. The transparencies were not controlled for expression or gesture across conditions except in the order sequences. The processed 2" x 2" transparencies were mounted in Kodak Carousel Slide trays. Each slide tray contained two sets of slides. One set consisted of the four conversations in a particular order with George portrayed as a black worker; the other set consisted of the four conversations in the same order with George portrayed as a white worker. Blank slides were placed between each conversation in a set and at the beginning and end of each set.

The conversations were recorded on only one track of the stereo cassettes. The other track contained timing pulses which cycled the Kodak Model 760 Carousel slide projector so that the transparencies were synchronized with

the conversations. A one second delay was introduced between George's request and Jack's reply to compensate for the cycling time of the slide projector.

Responses. Five booklets were prepared for the experimental session. The first booklet contained a set of general instructions which were also recorded on tape. The general instructions explained the general purpose of the study. In addition, biographical data concerning the person's age and work experience was requested in this booklet. Finally, the method of response was explained and two sample response sheets were attached with an explanation of how to use them.

The other four booklets were identical to each other in format and content. Each booklet contained five sets of response questionnaires. The first two were concerned with Jack's attitude toward George and George's attitude toward Jack. Each of these two sets contained nine semantic differential (Osgood et al., 1957) items. At the top of the page was the following statement: "Jack would say George is _____." Underneath were written the nine adjectives. The second attitude questionnaire was identical except that the lead statement reversed the order of the conversational participants (i.e., "George would say Jack is _____.") The randomly arranged nine response items contained three items from each of the following dimensions: Evaluation (good, clean, attractive); Potency (strong, powerful, influential); and Activity (active, hardworking, on-the-ball). The Ss were to respond by placing a number after each of the items. The numbers were from a ten point scale ranging from 0 (never) to 9 (always). The ten point scale was printed on the bottom of each page for each of the two sets of response questionnaires.

The third and fourth response questionnaire sets contained 15 behavior differential items (Triandis, 1964). The format of these response sets was

identical to that reported for the first two sets except that the numbers on the ten point scale ranged from never do (0) to always do (9). The randomly arranged fifteen response items contained three items from each of the following behavior differential factors: Respect (admire ideas of, admire character of, ask for opinion of); Intimacy (discuss sex life with, discuss intimate thoughts with, reveal dreams that worry him to); Friendship (gossip with, accept as a close friend, eat with); Social distance with hostility (reject his application for membership in his social club, exclude from his neighborhood, refuse to introduce him to his sister); and Super/subordination (would obey, would command, would criticize the work of).

The final response questionnaire consisted of two open-ended questions as follows: (1) "How should Jack have answered George in order to give George the impression that he is very friendly and concerned with his success in the factory?" and (2) "How should George have asked Jack for help in order to get all the help he needed?" Each of the four response booklets had a partial set of instructions for completing the questionnaires stapled to the front as a cover sheet.

Procedure. Four experimenters were used to conduct the study--two black undergraduates (male and female) and two white undergraduates (male and female). Each experimenter recorded the general instructions on tape and used that tape for all conditions he ran. All black Ss were run by black experimenters and all white Ss were run by white experimenters. Specific instructions for the conversations were recorded by a paid volunteer who had no further contact with the experiment. Each experimenter was assigned to forty one-hour sessions over a five-week period. The various cells in the design for which the experimenters were responsible (black experimenters received only the cells containing black Ss and white experimenters received

the complement) were randomly assigned to each of the 40 sessions so that each experimenter ran two Ss in all the cells and three Ss in half the cells.

Each experimental session was one hour in length. Since both experiment I and II were conducted during this period, the Ss were run one at a time. This facilitated complete randomization of the conditions in both experiments. However, the conditions for Experiment I always preceded the conditions for Experiment II. Each S reported to a subject waiting room prior to the experimental session. The experimenter then approached the S and asked him to report to the experimental room. All Ss were paid and released prior to approaching the next S. Contact between Ss in the experimental area was minimized.

The experimental room was approximately 10' square with a matt white projection screen on one wall. At the opposite end of the room was a table and bookcase containing the experimental materials. Prior to admitting the S, each experimenter placed the taped general instructions on the cassette player and selected the slide tray and taped conversations of the order and condition assigned to that session from the bookcase.

At the beginning of the session the S was seated in a classroom desk chair facing the projection screen at a distance of approximately eight feet. The Kodak projector and cassette recorder were located on the table in back of the S and outside his visual field. The purpose of the experiment was then explained, in general terms, to the S. The general instruction booklet was then given to the S and he was asked to read along as the experimenter played the general instructions on tape. After the general instructions were completed, all questions raised by the S were answered except those referring to the expected outcome of the experiment. Questions of this sort were deferred until the end of the session. Once all questions were answered,

the S was instructed to fill out the sheet requesting biographical information. Then taped instructions were played explaining how to fill out the sample response sheets.

While the S was completing the sample response sheet, the slide projector was turned on and the carousel slide tray was placed on the slide projector and moved to one of the two slide sequences. The taped conversation order was then placed on the cassette recorder. As soon as the S had completed the sample response sheets, they were checked by the experimenter to insure that the S understood the instructions (key items were chosen so that only one of the nine responses was plausible). If errors occurred, these were pointed out to the S and the proper response explained. It was repeatedly emphasized that the S was to record how Jack or George would respond to each other on the items and not how the S would have responded. As soon as it was known that the method of response was clear to the S and that the S had no more questions, the booklet was collected and the room lights were extinguished. Illumination for the experimenter was provided by a small flourescent desk lamp whose face was placed very close to the wall so that only a dim glow was visible. The blank slides prevented any glare from the projector prior to the appearance of the projected transparencies during a conversation.

As soon as the lights had been turned off, the tape recorder was started and the tape cassette containing the four conversations and timing pulses was played. At the end of the first conversation, a blank slide came on the screen and the experimenter stopped the tape and turned on the lights. At this time the first of the four response booklets was given to the S and the method of response re-emphasized. As soon as the S completed the booklet, the experimenter collected it, turned out the lights and started the second

conversation on the tape. This pattern was repeated until all four conversations were completed and all four response booklets were filled out by the S.

The experimenter then presented the condition from Experiment II assigned to that session. At the end of the session the specific purposes of the experiment were explained and all questions were answered completely and honestly. The S was then paid and escorted from the experimental room.

Experiment II

This was the main experiment of this series.

Subjects. The Ss were the same volunteers as those who participated in Experiment I (Variable 1).

Stimuli. For this experiment nine conversations were developed for the two individuals in the factory setting. Again, Jack and George were the fictitious names that were used. Jack was always white and George was either black or white. In this experiment Jack was always a foreman and George was always a worker (the worker-worker condition was not used). The nine conversations reflected agreement or disagreement between Jack and George at four different levels of abstraction--facilities, roles, norms, and values. The agreement or disagreement at each level, or at all levels, in each conversation was as follows:

Conversation I: four disagreements at the level of facilities.

Conversation II: four disagreements at the level of roles.

Conversation III: four disagreements at the level of norms.

Conversation IV: four disagreements at the level of values.

Conversation V:[2] disagreement at all four levels of abstraction.

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[2]Conversations IV through IX contain all four levels of abstraction within each conversation.

Conversation VI: disagreement at the levels of facilities, roles, and norms, and agreement at the level of values.

Conversation VII: disagreement at the levels of facilities and roles, and agreement at the level of norms and values.

Conversation VIII: disagreement at the level of facilities and agreement at the levels of roles, norms and values.

Conversation IX: agreement at all four levels of abstraction.

The format and content of the nine conversations can be found in Appendix B (Variable 4). The conversations were carefully controlled for syntax and grammar. The setting, method of recording, and actors were the same as those used in Experiment I.

As in Experiment I, color transparencies were taken of the actors as they said each of the lines in the conversation. Again the slides were not matched for expression or gesture across conditions, except for the neutral pose that preceded each conversation. All other stimulus controls were equivalent to those of Experiment I. This generated the 2 x 9 classification of the stimuli (race of worker x level of agreement/disagreement-abstraction).

Responses. Two response booklets were prepared for the experimental sessions. The first was equivalent to the response booklets used in Experiment I. The second booklet directly assessed the degree to which George and Jack would agree or disagree at each level of abstraction in a week's time. There were eight items on the questionnaire. Each level of abstraction was referred to by a pair of items. One item in the pair referred to the particular object of agreement or disagreement that had occurred concerning a level of abstraction in the conversations, the second item referred to another object not mentioned in any of the conversations, but at the same level of abstraction. The content of this questionnaire can be found

in Appendix B. The scale for this questionnaire was again 0 (never would) to 9 (always would). The stem for the items was "How likely is it that, one week later, Jack and George would _____."

Procedure. The experimenters were the same as those used in Experiment I. The experimental session was the last part of the session for Experiment I. The conditions of Experiment II were randomly assigned, one to each session independently of the condition assigned to the session from Experiment I. While the S was completing the fourth response booklet from Experiment I, the experimenter removed the tape cassette and carousel slide tray from the equipment used for Experiment I and placed the slide tray and tape corresponding to the selected condition from Experiment II for that session on the equipment. Each of the 18 conversations had identical introductory remarks on the tape. The introduction explained that the conversation was different from the first four he had heard (i.e., it was longer, had somewhat different context, etc.); however, the S would be asked to perform tasks similar to what he had just completed.

The lights were then extinguished and the tape and projector were started. At the end of the conversation the lights were turned on and the S was given the first booklet. As soon as the booklet was completed the experimenter removed it and handed the second booklet to the S. A set of instructions explaining the method of response was then played on tape while the S read an identical set attached to the booklet. All questions concerning method of response were clarified and it was emphasized that the S was rating a "probability of occurrence in one week's time." As soon as the S completed the booklet, the specific purposes of both Experiment I and II were explained and all questions were answered as completely as possible. As soon as all questions were answered the S was paid and escorted from the experimental room.

Results

Analysis of Dependent Variables

The responses obtained from the subjects on the nine Semantic Differential and 15 Behavioral Differential scales were subjected to factor analyses. Since the same responses were obtained after the two experiments it was possible to do two factor analyses. The results were reasonably consistent, allowing us to extract seven dependent variables.

1. Global evaluative dynamism of George by Jack. The four highest loading variables on this factor were Jack says that George is good, active, on-the-ball and hardworking.

2. Evaluative dynamism of Jack by George. This factor was characterized by high loadings on George says that Jack is influential, powerful, on-the-ball and hardworking.

3. Intimate friendship between Jack and George. This factor is characterized by high loadings on Jack says that he would gossip with George, George says that he would discuss his sex life with Jack, gossip with Jack and discuss intimate thoughts with Jack.

4. Respect for Jack by George. George says he would admire Jack's ideas and character.

5. Hostility toward Jack by George. George says he would exclude Jack from his neighborhood and reject Jack's membership in his social club.

6. Hostility toward George by Jack. Jack says he would exclude George from his neighborhood and reject George's membership in his social club.

7. Superordination of Jack to George and subordination of George to Jack. Jack would command George and George would obey Jack.

The intercorrelations among the dependent variables are presented in Tables 1 and 2. (Only significant correlations are shown.) It is clear that

Table 1

Intercorrelations Among the Seven Dependent Variables for Experiment I

		1	2	3	4	5	6	7
1.	Global evaluative dynamism of George by Jack	1.00						
2.	Evaluative dynamism of Jack by George	.40[a]	1.00					
3.	Intimate friendship between Jack and George	.35	.40	1.00				
4.	Respect for Jack by George	.43	.63	.58	1.00			
5.	Hostility toward Jack by George	-.18	-.23	-.32	-.45	1.00		
6.	Hostility toward George by Jack	-.39	----	-.30	-.27	.51	1.00	
7.	Superordination of Jack to George and subordination of George to Jack	----	.32	----	.25	----	.31	1.00

[a]The correlation is shown only if $r > .16$, $p < .05$ for 1 and 154 degrees of freedom.

Table 2

Intercorrelations Among the Seven Dependent Variables for Experiment II

		1	2	3	4	5	6	7
1.	Global evaluative dynamism of George by Jack	1.00						
2.	Evaluative dynamism of Jack by George	.52[a]	1.00					
3.	Intimate friendship between Jack and George	.46	.54	1.00				
4.	Respect for Jack by George	.60	.63	.61	1.00			
5.	Hostility toward Jack by George	-.22	-.26	-.37	-.36	1.00		
6.	Hostility toward George by Jack	-.41	-.34	-.48	-.50	.62	1.00	
7.	Superordination of Jack to George and subordination of George to Jack	----	.25	----	.26	----	----	1.00

[a]Correlation is shown if $r > .16$, $p < .05$ for 1 and 154 degrees of freedom.

the dependent variables obtained from the factor analyses were still quite highly correlated. However, this was expected since the seven dependent variables represented a slight compromise between the two factor analyses and since the dependent variables were obtained by summing variables with the highest loadings within independent clusters of variables (a procedure outlined by Triandis [1964]) which does not totally eliminate between cluster covariance. The importance of the significant intercorrelations is further outlined in the discussion section.

Examination of the Effects of Independent Variables on Dependent Variables

Experiment I

The effects of the two independent variables (degree of warmth and degree of autonomy) were examined through repeated measures analyses of variance on each of the dependent variables. Since we had seven dependent variables, this required seven separate analyses of variance.

In addition, the effects of four other independent variables--race of subject (black-white), role played by Jack (foreman-worker), race of George (black-white) and sex of experimenter--were examined through independent groups analysis of variance. This generated a six-factor design with replications and repeated measures. Since the cell frequencies were unequal, an unweighted means analysis was performed (Winer, 1962, pp. 374-378).

Most of the results of this experiment are too complex and the details too numerous to present in the body of this report. We will therefore present an overall view here and list the details in Appendix A.

The first question was whether the methodology we have developed for the study of social perception is sufficiently sensitive and gives meaningful results. If it is sensitive, we ought to get significant differences in the responses of the Ss when they viewed the four conversations. We can also expect interactions with the other independent variables of the experiment.

The analyses show that we obtained significant main effects for the two major dimensions we included in our conversations on almost all the analyses of variance of our dependent variables. Estimates of the variance accounted for by each dimension, the value of the F-Ratio for Warmth and for Autonomy, and the number of additional significant interactions obtained for each dependent variable are shown in Table 3.

Table 3 shows that both the warmth and the autonomy manipulations gave significant effects on all the dependent variables of the experiment. Furthermore, the ranges of omega square estimates, of the amount of variance accounted, show rather impressive control of the variance. For example, on global evaluative dynamism the estimates range from 44% to complete control of the variance, on this dependent variable, by the sum of the two experimentally manipulated independent variables. In addition, the table shows numerous interactions, and at least one interaction involving the manipulated variables, for each dependent variable. In short, there is strong evidence that the procedure works well and can be used in further research.

The next question is whether the results "make sense." Here again we can be emphatically positive. Specifically the warm, autonomous reply to a request for help is most likely to produce more positive attributions of evaluation and behavioral intentions toward both the requester and the person replying to the request. The analyses also indicate that the "worst" reply is a cold, controlling reply while warm, controlling or cold, autonomous replies are intermediate.

An interesting exception to this pattern, however, occurred on the "subordination of George to Jack" dependent variable. Here the warm, autonomous reply produced attributions of least subordination by all subjects whereas the warm, controlling reply produced the greatest amount of perceived subordination.

Table 3

Summary of Analyses of Variance for Experiment I

Name of Dependent Variable	F Ratio of Warmth	Estimate of Variance Accounted	F Ratio of Autonomy	Estimate of Variance Accounted	No. of Significant Interactions Involving Experimenter	Warmth or Autonomy
Global Evaluative Dynamism of George by Jack	138.5**	.20 - .50	154.2**	.22 - .52	2	6
Evaluative Dynamism of Jack by George	89.1**	.14 - .39	26.3**	.04 - .16	1	4
Intimate Friendship	65.0**	.10 - .32	60.0**	.10 - .30	1	4
Respect for Jack by George	98.0**	.15 - .41	58.5**	.10 - .30	2	5
Hostility toward Jack by George	49.3**	.08 - .26	40.6**	.07 - .23	2	8
Hostility toward George by Jack	66.8**	.11 - .32	107.7**	.16 - .44	1	2
Superordination of Jack and Subordination of George to Jack	<1	Nil	16.5**	.03 - .11	3	5

*p < .05
**p < .01

When the reply was warm and autonomous, the attributions were also affected the least by the other independent variables (e.g., sex of experimenter). The majority of the higher order interactions involving the degree of warmth and degree of autonomy in Jack's reply occurred because of complex attributions in the warm-controlling, cold-autonomous, and cold-controlling cells. This complexity can be traced to two different sources: (1) the role played by Jack and (2) the tendency of the black and white subjects to attribute differentially depending on the race of George. Thus when two stimulus persons are of equal status (i.e., the stimuli are co-workers) it makes very little difference whether the reply is autonomous or controlling as long as it is also cold; the attributions are very similar, i.e., neither reply is seen as very positive or very negative. However, if there is a status difference between the stimulus persons (i.e., the person replying is a foreman), subjects will attribute significantly more positive evaluations and behavioral intentions to <u>both</u> stimulus persons when the reply is more autonomous regardless of the degree of warmth. Conversely, the subjects will respond negatively when the reply is controlling.

The second source of complex attributions, in the warm-controlling, cold-autonomous, and cold-controlling cells, was the interaction between the race of subject and the race of George. The pattern of attributions in these cells suggests that for any reply other than the warm-autonomous, subjects attribute significantly more negative evaluation and behavioral intentions when the request is made by a stimulus person who is of the same race as the subject. This general pattern varied considerably across the dependent variables, however. The exact pattern for each dependent variable is given in detail in Appendix A.

A major finding of the first study was a differential sensitivity by the black and white subjects to the dimensions of warmth and autonomy. That is, the white subjects tended to be much more sensitive to the degree of autonomy in Jack's reply than were the black subjects, whereas the black subjects were slightly more sensitive to the degree of warmth in Jack's reply than were the white subjects (see Appendix A). These effects were the strongest cultural differences that appeared in the analyses (see Appendix A). A note of caution, however, is in order since these effects were sometimes confined to specific levels of the other independent variables. In general, in those levels of the independent variables in which the race of the subject x degree of autonomy interaction did not occur, both groups of subjects saw only moderate differences and at no time were black subject responses significantly more extreme on the autonomy dimension than white subject responses.

It should also be stated that the race of subject x degree of warmth interaction mentioned above was weak and affected only some of the dependent variables. Although white subjects never perceived a significantly greater difference between a warm and a cold reply than did black subjects, black subjects did. The greater sensitivity of the black subjects to the degree of warmth was significant in the case of the three dependent variables where the subjects attributed evaluation and behavioral intentions of George toward Jack (evaluative dynamism of George toward Jack, respect for Jack by George, and hostility toward Jack by George). Furthermore, it was strongest when George was black.

We interpret these findings as confirming the black culture's greater sensitivity to the degree of warmth dimension.

The absence of this effect when subjects attributed evaluation and behavioral intentions of Jack toward George, suggests that no matter what Jack did the black subjects saw him as prejudiced. Furthermore, the generally more negative attributions by the black subjects on the variables, in which Jack is the actor, also suggest that the black subjects were attributing prejudice to Jack. This attribution may have suppressed the race of subject x degree of warmth effect for these particular dependent variables.

Cultural differences in the perception of the stimulus persons did exist, primarily when the request was made by a black man. This occurred in specific instances within certain dependent variables. Specifically, for the evaluative dynamism of Jack by George, intimate friendship between Jack and George, and respect for Jack by George variables, white subjects attributed more positively if George was black than they did if George was white and black subjects attributed significantly more negatively if George was black than they did if George was white. In short, the whites see deference and the blacks hostility when the worker is black. (However, the higher order interactions suggest that this was due to the substance of Jack's reply rather than differing cultural norms for requesting help.)

The "hostility" dependent variables and the "subordination" variable showed a main effect for race of George that was modified little by the higher order interactions. In this case both groups of subjects perceived greater hostility between Jack and George and greater subordination of George to Jack when George was black. Since blacks perceive most whites as hostile and intent on forcing a superordinate role in relations with blacks, and since asking a white for help increases the probability of both events (subordination is implied by the request; simply bringing oneself to the attention of the white exposes the black to the possibility of a hostile reaction), the blacks may find it expedient to simply avoid asking for help.

There was no consistent effect for greater differentiation of black or white subjects' attributions. Black subjects tended to be more sensitive to the sex of the experimenter only in the case of global evaluative dynamism of George by Jack. In the remaining dependent variables both groups of subjects tended to differentiate more in the presence of a male experimenter. Also, the tendency of the subject groups to stereotype George by his race depended on the content of the dependent variables. Both black and white subjects gave more differentiated attributions on the "evaluation" variables and on the "intimate friendship" variable when George was black. Of the remaining variables, greater differentiation by both groups of subjects occurred on the "hostility" variables when George was white.

This finding was consistent with previous research by Triandis and Davis (1965). They found that for more formal behaviors (evaluation, respect, etc.) the stimulus person's beliefs were more important than his race in determining the subject's social perceptions. For behaviors which were more intimate (marriage, hostility, and subordination) the race of the stimulus person was the most salient factor.

In the present study, higher order interactions were observed in those cells in which George was black and those dependent variables involving formal behaviors or in the cells in which George was white and the behaviors were intimate. This means that when George was black his beliefs controlled much variance on the formal behaviors, but there was little difference on the intimate; the obverse happened when he was white. This was true for <u>both black and white subjects</u>. The reverse effect when George was white suggests that in the "request for help" domain of interpersonal attraction, situational variables (such as the sex of the experimenter) have less effect in the case of formal behaviors and greater effect in the case of intimate behaviors.

Note that there is a main effect for race of George in the more intimate behaviors only (greater hostility toward Jack by George and hostility toward George by Jack and less superordination of Jack to George and subordination of George to Jack was attributed when George was black than when he was white). Finally in none of the variables did the black subjects give more differentiated attributions than did the white subjects.

To summarize, there are two general outcomes of this study that merit comment. (1) The lack of symmetry (or reciprocity) in the subjects' attributions of Jack's evaluation of and behavioral intentions toward George and George's evaluation of and behavioral intentions toward Jack in all but the intimate friendship and subordination-superordination variables; and (2) the large number of significant and systematic higher order interactions within and across the dependent variables.

Detailed examinations of the lack of symmetry between the grand means of the first, second, fourth, fifth, and sixth dependent variables (global evaluative dynamism of George by Jack, evaluative dynamism of Jack by George, respect for Jack by George, hostility toward Jack by George, and hostility toward George by Jack, respectively) suggests that none of the independent variables could account for the asymmetry in the grand means nor could the reported interactions, because the subjects consistently attributed more positive evaluative dynamism of Jack, more respect for Jack, and less hostility toward Jack by George than vice versa, for every comparable cell of the main effects and interactions and in the vast majority of the cells in the design.

There are three plausible interpretations of the asymmetrical attributions of the subjects. First, concurrent with or prior to their attributions of evaluation and behavioral intentions to Jack, the subjects may have also

attributed prejudice which may have produced the more negative attributions to Jack than to George. This interpretation, however, cannot explain the asymmetry when Jack and George are both white, nor can it adequately explain why the subjects' attributions of intimate friendship between Jack and George and subordination of George to Jack were symmetrical. On the other hand, this explanation cannot be completely disregarded, because of the pattern of several interactions, especially those involving the race of the subject and the race of George, which tend to support this interpretation.

The second interpretation of the asymmetry in five of the seven dependent variables is related directly to the methodology of the design for this study. In the conversations presented to the subjects, George requested help in completing a task. Implicit in this request is the assumption that Jack has the information and/or skills to assist George. Thus, the subjects' positive attributions of respect for Jack and evaluative dynamism of Jack by George may simply reflect the subjects' perception of George's evaluation of those skills which Jack possesses. On the other hand, the tone and content of Jack's reply can only be attributed to his actual feelings toward George. Furthermore, each subject saw all four of the replies in one of four orders. Since three of the four orders had either a cold or controlling tone and content as the first of the four replies each subject saw, a somewhat negative response set may have been induced that affected the remaining three replies even though, as reported earlier, none of the items used for the dependent variables showed a significant order effect. Thus, the combination of these effects in the methodology may have caused the asymmetry in the five dependent variables.

The last interpretation of the asymmetry involves the content of the dependent variables themselves. The asymmetrical dependent variables all involve evaluations or behavioral intentions that do not depend on direct interaction between Jack and George whereas the symmetrical dependent variables do. For example, it is possible for Jack to perceive George as less active and powerful than George perceives Jack and yet have no direct effect on their interactions except that they might be more strained. The same is true concerning George's intentions to admire Jack's character (respect) or exclude Jack from his neighborhood (hostility). However, the behavioral intentions of intimate friendship or subordination of George to Jack require reciprocity. That is, it is very difficult for George to gossip with Jack unless Jack is willing to listen and vice-versa or for Jack to command George unless George is willing to be commanded by Jack.

The above interpretation is probably the most parsimonious of the three discussed in that it doesn't require an extra-experimental hypothesis as the other two do. But it too suffers from a serious drawback in that while it predicts (post hoc) which dependent variables will be symmetrical, it cannot predict in which direction the means of the asymmetrical variables will go or "explain" why. Finally, it should be noted that the three interpretations, while independent of one another, are not mutually exclusive. The most likely interpretation may be a combination of all three.

The remaining general outcome to be discussed was the large number of highly significant and systematic reoccurrences of higher order interactions across the seven dependent variables (see Appendix A). This outcome is of interest because of the rare occurrence of higher order effects in previous research on social perception. For example, Triandis (1964) in an initial investigation of behavioral intentions toward complex stimulus persons obtained

significant main effects and first order interactions only in the analyses of his data. In that experiment, stimulus persons were presented by written description using trait names (e.g., 50-year-old Negro woman physician). In a related experiment, Triandis, Loh and Levin (1966) investigated the effects of race, status, quality of spoken English, and opinions on civil rights on interpersonal attitudes. The mode of presentation was similar to that used in the present study. Again only the main effects and a few first order interactions were significant. Triandis and Triandis (1965) reported main effects and first-order interactions only in several cross-cultural studies of social distance for complex stimulus persons using the written description mode of presentation. In fact, the data from most social perception studies has been so consistent that main effects models have dominated contemporary theories of social perception (Osgood, 1960; Triandis & Fishbein, 1963; Anderson, 1968; Rokeach & Rothman, 1965).

Thus the occurrence of 28 second-, third-, and fourth-order interactions in this study is a stark contrast to the data and theories of contemporary social perception. There are several possible hypotheses that could explain this outcome. Perhaps the simplest and most obvious is that the interactions may have occurred simply by chance. Across the seven dependent variables, there are 294 independent F-tests of interactions equal to or greater than second-order. By chance 15 of these would be significant at .05 level or higher. However, by chi-square tests, the obtained frequency of F-ratios was significantly different ($p < .0000$) from the expected frequency (based on a centralized F-distribution of the F-ratios with 1 and 140 degrees of freedom--regardless of the number of intervals chosen for the tests). Thus, the hypothesis that the higher-order interactions were due to chance can be rejected.

Other, less obvious, but theoretically more important hypotheses, concern differences in methodology between the present study and previous research. One hypothesis involves the specificity and complexity of the stimulus cues for both the situation and the stimulus persons in the present study. That is, a specific interaction (asking for help) occurred in a specific setting (work situation) between specific stimulus persons (Jack was a particular foreman or worker and George was a particular black or white person). In contrast, most of the previous research has presented general trait classes (intelligence or honesty) or general person classes (50-year-old or physician). In addition, subtle cues in the voices and expressions of the stimulus persons could not be controlled for in the present study and are absent from the written presentations in previous research, with the exception of the paper by Triandis, Loh and Levin (1966). The occurrence of complex interactions with the presentation of highly complex stimuli suggests that the main effects models of social perception proposed by Anderson (1968), Osgood and Tannenbaum (1955), and others (Rokeach & Rothbaum, 1965; Triandis & Fishbein, 1963; Chalmers, 1969) may be inadequate for highly specific stimulus person cues and/or highly specific situational cues.

Another hypothesis, which also has bearing on the main effects models of social perception, is the speed with which the stimulus and situational cues are presented and the length of time they are available to the subjects in the present study. In previous research, the cues were available to the subjects for as long as they needed them to make a decision. Thus, in the present study, the subjects may not have been able to process the cues sequentially, as Anderson (1968) proposed--a thesis which directly implies a main effects model--and therefore may have had to use a more complex process called parallel processing (Neisser, 1962).

Experiment II

Analyses of variance were done for each of the seven dependent variables. Since each subject received only one of the nine conversations, the four independent variables (race of subject, role played by Jack, race of George, and conversation type) were analyzed in an independent groups design with unequal N per cell (Winer, 1962, pp. 224-227). The results were much less complex than those reported for Experiment I. Table 4 gives the significant effects for all seven dependent variables.

Since the significant main effects and interactions reported in Table 4 directly concern the predictions from the theory of disagreement and levels of abstraction presented earlier, these effects will be discussed in relation to those hypotheses. In order to mention the treatments in each conversation, we will adopt a simple notation: F, N, R and V stand for agreement at the levels of facilities, norms, roles and values; $\overline{F}$, $\overline{N}$, $\overline{R}$ and $\overline{V}$ stand for disagreement.

Smelser's (1963) theory suggests that disagreements at the level of values indicate more fundamental disparity between people than disagreements at the level of facilities. This suggests that disagreements at the level of values should have a more widespread effect on evaluation and behavioral intentions than disagreements at the level of facilities. Thus, in hypothesis I we predicted that conversation 4 ($\overline{V}$, $\overline{V}$, $\overline{V}$, $\overline{V}$) would have a greater effect on the dependent variables than conversation 3, 2, and 1 which involved four disagreements on norms, roles and facilities, respectively.

The data were examined for all subjects on each of the dependent variables within each conversation type. A simple index of agreement between our predictions and the obtained results involved the extent to which the means for each dependent variable deviated from the midpoint of the summed scales

Table 4

Analyses of Variance Related to Disagreements at Various Levels of Abstraction and Interpersonal Attraction for Seven Dependent Variables

Source	Global Evaluative Dynamism of George by Jack				Evaluative Dynamism of Jack by George				Intimate Friendship between Jack & George				Respect for Jack by George			
	df	MS	F	ω^2	df	MS	F	ω^2	df	MS	F	ω^2	df	MS	F	ω^2
Between Groups																
Race of Subject(A)	1	23.99	[b]		1	51.43			1	31.05			1	.04		
Race of George(B)	1	.26			1	198.28	4.56	5.0	1	138.24	3.73	4.1	1	28.86		
Sex of Experimenter(C)	1	.20			1	7.98			1	59.13			1	30.07		
Conversation Type(D)	8	87.13	2.17	16.6	8	203.18	4.67	30.0	8	68.30			8	52.75	3.86	26.2
A X B									1	142.20	3.83	4.2				
B X D	8	105.68	2.63													
Ss Within Groups	87	40.20			87	43.53			87	37.10			87	13.68		

[a] Due to unequal N per cell, the approximate method of unweighted means, analysis of variance was used (Winer, 1962, pp. 224-227).

[b] Non-significant F-ratios are not shown in this table. All F-ratios shown have $p < .05$ for 1 and 87 degrees of freedom or 8 and 87 degrees of freedom.

(Table 4 continued on next page)

Table 4 (Continued)

Analyses of Variance Related to Disagreements at Various Levels of Abstraction and Interpersonal Attraction for Seven Dependent Variables

Source	Hostility toward Jack by George				Hostility toward George by Jack				Superordination of Jack to George & Subordination of George to Jack			
	df	MS	F	ω^2	df	MS	F	ω^2	df	MS	F	ω^2
Between Groups												
Race of Subject(A)	1	18.99			1	1.73			1	82.30	7.04	7.5
Race of George(B)	1	84.74	3.97	4.4	1	291.89	14.41	14.2	1	15.74		
Sex of Experimenter(C)	1	29.94			1	.86			1	3.21		
Conversation Type(D)	8	82.35	3.86	25.9	8	79.10	3.90	26.4	8	16.21		
A X B												
B X D												
Ss Within Groups	87	21.34			87	20.25			87	11.69		

[a] Due to unequal N per cell, the approximate method of unweighted means, analysis of variance was used (Winer, 1962, pp. 224-227).

[b] Non-significant F-ratios are not shown in this table. All F-ratios shown have $p < .05$ for 1 and 87 degrees of freedom or 8 and 87 degrees of freedom.

for that dependent variable. This index allows the computation of a t-statistic for each dependent variable which can be tested for significance. A linear increase in the number of significant t-tests from conversation 1 ($\overline{F}$, $\overline{F}$, $\overline{F}$, $\overline{F}$) through 4 ($\overline{V}$, $\overline{V}$, $\overline{V}$, $\overline{V}$) would confirm the hypothesis. The t-statistic used for this analysis was the standard population t-statistic as follows:

$$t = \frac{\overline{X} - u}{\sqrt{S^2/N}}$$

where $\overline{X}$ = sample mean
S^2 = sample variance
N = no. of subjects
and u = scale midpoint.

Since this statistic has a "known" population mean the degrees of freedom for the statistical test is the number of observations in each sample or N. Because of unequal N in the cells the different samples for the t-test have different degrees of freedom.

For conversation 1 ($\overline{F}$, $\overline{F}$, $\overline{F}$, $\overline{F}$) three of the seven dependent variables showed a significant deviation from their scale midpoints by the two-tailed t-test with 15 degrees of freedom. The significant deviations occurred for global evaluative dynamism of George by Jack ($t = -7.34$, $p < .01$), intimate friendship between Jack and George ($t = -13.87$, $p < .001$), and respect for Jack by George ($t = -4.65$, $p < .01$). All deviations were in a negative direction as expected (i.e., the means indicated low evaluation, formality and low respect).

In conversation 2 ($\overline{R}$, $\overline{R}$, $\overline{R}$, $\overline{R}$) five of the seven dependent variables had means significantly different from their scale midpoint. Again, the significant deviations occurred for global evaluative dynamism of George by Jack ($t = -4.50$, $p < .01$, $df = 16$), intimate friendship between Jack and George ($t = -6.52$, $p < .01$, $df = 16$), and respect for Jack by George ($t = -4.61$, $p < .01$, $df = 16$). In addition, the means for hostility toward Jack by George ($t = 3.178$, $p < .01$, $df = 16$) and subordination of George to Jack ($t = -2.731$,

$p < .02$, df = 16) were significantly different from the scale midpoints. Again all deviations were in the expected direction of more negative evaluation, respect and friendship and greater hostility and less subordination.

Conversation 3 ($\overline{N}$, $\overline{N}$, $\overline{N}$, $\overline{N}$) also had five dependent variables with means significantly different from their scale midpoints (two-tailed test, df = 21). As in conversations 1 and 2, significant deviations occurred for global evaluative dynamism of George by Jack ($t = -5.31$, $p < .01$), intimate friendship between Jack and George ($t = -9.93$, $p < .01$), and respect for Jack by George ($t = -4.81$, $p < .01$). Consistent with conversation 2, the fourth significant deviation was hostility toward George by Jack ($t = 3.025$, $p < .01$). However, the fifth dependent variable with a significant deviation from the scale midpoint was evaluative dynamism of Jack by George ($t = -3.76$, $p < .01$) and not subordination of George to Jack ($t = -1.262$, N.S.) as in conversation 2. This represents a discrepancy in the pattern of stabilized significance of a dependent variable as the level of abstraction has increased. This discrepancy is discussed in greater detail below.

Finally, conversation 4 ($\overline{V}$, $\overline{V}$, $\overline{V}$, $\overline{V}$) had six of the seven dependent variables with means that deviated significantly from the scale midpoint. The pattern of stabilized significance was maintained for this conversation type when compared with conversation 3 ($\overline{N}$, $\overline{N}$, $\overline{N}$, $\overline{N}$). That is, significant deviations (two-tailed, df = 19) occurred for global evaluation of George by Jack ($t = -8.39$, $p < .01$), intimate friendship between Jack and George ($t = -8.01$, $p < .01$), respect for Jack by George ($t = -5.84$, $p < .01$), hostility toward George by Jack ($t = 6.42$, $p < .01$) and evaluative dynamism of Jack by George ($t = -3.76$, $p < .01$) in conversation 4 as they were for conversation 3. The sixth significant deviation from the scale midpoint was hostility toward Jack by George ($t = 4.19$, $p < .01$)

Thus, hypothesis I which predicted increased spread of the effects of disagreement across dimensions of evaluation with increased level of abstraction was confirmed. Furthermore, support for the hypothesis was also obtained by the pattern of stabilized significance of the dependent variables across the conversation types. That is, once a significant deviation occurred for a dependent variable at a particular level of abstraction, this dependent variable tended to remain significant at higher levels of abstraction. The one exception to this was the significant deviation of the "subordination of George to Jack" variable for conversation 2 ($\overline{R}$, $\overline{R}$, $\overline{R}$, $\overline{R}$) only. However, this exception may be explained by the context of conversation 2--disagreement over roles. Specifically, the four disagreements over roles concerned whose job it was to clean up a work area. In a work setting, this type of disagreement may relate to subordination or superordination in a highly specific manner. That is, since Jack was a foreman in all conditions and since determination of job roles relates directly to the superordinate position of the foreman, a significant deviation from the scale midpoint would be expected. At the other levels of abstraction, the role of the foreman in relation to subordination is less clear (see Appendix A). This suggests that disagreements at any particular level of abstraction may have effects on evaluations or behavioral intentions that are related to the specific context of the disagreement.

Finally, further support of the direct relationship between level of abstraction and effect of disagreement was the fact that for all levels of abstraction, the deviation from the scale midpoint was in the expected direction. That is, disagreements at all levels of abstraction produced more negative global evaluative dynamism of George by Jack, more distant intimate friendship between Jack and George, less respect for Jack by George, and so on. Furthermore, the deviations for each dependent variable tended to increase in the expected direction with increases in the level of abstraction.

The arguments presented in the introduction specified a particular order of interpersonal attraction. The most attractive condition would be conversation 9 (F, R, N, V); the next most attractive should be conversation 8 ($\overline{F}$, R, N, V); the next most attractive situation should be represented by conversation 7 ($\overline{F}$, $\overline{R}$, N, V); the next should be conversation 6 ($\overline{F}$, $\overline{R}$, $\overline{N}$, V); the next are the four conversations which reflected only disagreements. Presumably conversation 1 ($\overline{F}$, $\overline{F}$, $\overline{F}$, $\overline{F}$) which reflects only disagreements at the level of facilities should be less damaging to interpersonal perception than conversation 2 ($\overline{R}$, $\overline{R}$, $\overline{R}$, $\overline{R}$) which reflects four disagreements at the level of roles, which should be less damaging than conversation 3 ($\overline{N}$, $\overline{N}$, $\overline{N}$, $\overline{N}$) which reflects four disagreements at the level of norms, which in turn should be less damaging than conversation 4 ($\overline{V}$, $\overline{V}$, $\overline{V}$, $\overline{V}$) which includes four disagreements at the level of values. Conversation 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$) is assumed to be intermediate between 3 and 4 because it has four disagreements at four levels of abstraction and, therefore, is not quite as damaging as four disagreements at the highest level of abstraction as is the case of conversation 4. In short, from hypothesis II (the higher the level of abstraction the greater the effects of disagreements), we predicted the following order: 9, 8, 7, 6, 1, 2, 3, 5, 4.

The data were examined separately for the black and white subjects for each of the dependent variables. The means are presented in Table 5 for race of subject x conversation type for all 7 dependent variables. A simple index of agreement between our predictions and the obtained results involves a rank ordering of the means of each dependent variable obtained after each conversation. Such rank orderings allow the computation of a rank order correlation based on an N of 9. With nine observations, a rank order correlation of .68 is significant at the .05 level and .82 is significant at the .01 level.

Table 5

Means for Race of Subject by Conversation Type for 7 Dependent Variables Used to Calculate Rank-Order Correlation between Predicted Order and Obtained Order (see text)

Conversation Number	Global Evaluative Dynamism of George by Jack		Evaluative Dynamism of Jack by George		Intimate Friendship between Jack & George		Respect for Jack by George	
	Black Ss	White Ss	Black Ss	White Ss	Black Ss	White Ss	Black Ss	White Ss
1	9.88	10.25	15.12	19.88	6.62	9.00	5.12	5.88
2	10.46	10.00	16.25	18.25	7.88	9.71	4.54	5.71
3	10.13	11.79	9.32	14.83	3.71	8.62	4.13	5.58
4	9.88	8.45	13.62	11.42	9.62	5.71	6.38	3.29
5	9.75	9.88	13.75	12.00	7.25	4.12	4.12	3.62
6	13.88	15.75	22.25	20.58	13.67	7.25	10.21	7.62
7	11.92	11.50	17.17	19.12	11.79	8.00	7.95	8.25
8	13.88	17.62	19.88	2.38	13.12	11.25	8.25	8.38
9	11.96	13.29	19.04	19.67	7.88	9.54	5.04	7.71

Table 5 (Continued)

Conversation Number	Hostility toward Jack by George		Hostility toward George by Jack		Superordination of Jack to George & Subordination of George to Jack	
	Black Ss	White Ss	Black Ss	White Ss	Black Ss	White Ss
1	7.75	5.75	11.00	9.62	9.62	12.12
2	12.54	7.25	13.75	11.38	9.75	12.12
3	10.26	9.00	11.30	12.04	8.18	11.25
4	10.50	14.67	12.38	15.54	11.75	9.38
5	9.50	8.88	14.25	13.25	9.00	11.04
6	7.83	8.46	9.08	8.92	10.79	12.38
7	10.42	8.25	11.96	12.00	11.71	13.00
8	5.75	6.25	6.50	9.12	11.25	12.62
9	5.50	5.04	10.67	7.04	11.45	14.04

The global evaluative dynamism of George by Jack gave a rank order correlation between predicted and obtained scores of .87 ($p < .01$) for the white subjects and .85 ($p < .01$) for the black subjects.

On the second dependent variable, evaluative dynamism of Jack by George, both the white and black subjects provided scores for which the correlation between expected and obtained rank order was .82, significant at the .01 level.

Variable 3 gave correlations of .62 ($p < .10$) for the white sample and .32 (N.S.) for the black sample.

Variable 4 (respect for Jack by George) gave a rank order correlation of .94 ($p < .01$) for the white sample and .65 ($p < .10$) for the black sample.

Variable 5 involving hostility toward Jack by George was consistent with our predictions for the white sample ($r = .84$, $p < .01$), but not for the blacks ($r = .58$). Variable 6 (Jack's hostility to George) was consistent with our prediction ($p < .05$) for both the white (.80) and the black sample (.74).

Finally, variable 7 (superordination of Jack to George and subordination of George to Jack), the prediction was strikingly confirmed for the white subjects (.97) and was not confirmed for the black subjects ($r = .42$).

To summarize for six out of seven factors, for the white samples, the predicted order was supported, but the black samples conformed with prediction only for the two evaluative factors. On the other hand, all rho's were positive suggesting that hypothesis I is fully supported for whites and directionally supported for all samples.

It is particularly interesting to explore the failures to predict since such explorations can lead us to a better understanding of the reasons for this failure. Looking first at the intimate friendship factor, we note a

major discrepancy between expected and obtained means for conversations 4 ($\overline{V}$, $\overline{V}$, $\overline{V}$, $\overline{V}$) and 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$), as well as 9 (F, R, N, V). In conversations 4 and 5, we expected low levels of intimacy but obtained moderate levels of intimacy from our black subjects (see Table 5). This was not true for our white subjects who conformed with our theoretical expectations. There appears, then, to be some differences between the black and white subjects in the way they perceive situations involving much disagreement. Such strong disagreements produce less perceived intimate friendship among black subjects than conversation 6 ($\overline{F}$, $\overline{R}$, $\overline{N}$, V) in which disagreements at the levels of facilities, roles and norms were followed by agreement at the level of values. It may well be that the black subjects are exceptionally sensitive to the order of presentation of the disagreements. It is also notable that for the black subjects conversation 9, which included only agreements, was rated as implying less intimacy than conversations 4 and 5 which consisted of only disagreements (see Table 5). It appears, then, that the cues that the black subjects employ in attributing intimate friendship include the presence of a certain amount of disagreement, and conversely if there is only agreement the situation implies formality to the blacks.

Turning to the white subjects we find the most serious problem with conversation 2, which included four disagreements at the level of roles for which we had predicted a moderately negative influence on intimate friendship but our observations did not support us. It appears, then, that four disagreements at the level of roles are perceived by white subjects as implying a fair amount of intimate friendship (see Table 5).

Another way to look at this data is to examine black and white discrepancies in the observed scores. Here we find a major discrepancy in conversations 2 ($\overline{R}$, $\overline{R}$, $\overline{R}$, $\overline{R}$) and 6 ($\overline{F}$, $\overline{R}$, $\overline{N}$, V). In conversation 2 we have

four disagreements at the level of roles and the white subjects infer a fair amount of intimate friendship, while the blacks infer very little intimate friendship. Conversely, in conversation 6, we have disagreements at the levels of facilities, roles and norms followed by agreement at the level of values. Here the blacks infer a great deal of intimate friendship but the whites do not.

Another failure to predict occurred on the superordination/subordination dimension. We had predicted that conversation 4, involving four disagreements at the level of values, would lead to inference of much less superordination. This prediction was strongly supported by the data we obtained from the white subjects, but was completely wrong for the black subjects who show very much superordination when such disagreements were presented. Thus, it appears that there are cultural (racial) differences in responses to disagreements. First, the blacks perceive situations involving some disagreement as rather "good" and situations involving no disagreements as rather "phony" (too formal). Second, whites do not seem to get upset by several disagreements at the level of roles while blacks do see much more hostility in such situations. It might be that whites feel that disagreements at the levels of roles imply agreement at the level of norms and values, and hence occur in relatively friendly situations. On the other hand, blacks see such disagreements as more serious, because many of the current disagreements involve role disagreements, as for instance, discrimination in housing (can you be my neighbor?), in job assignments (low level jobs are "good" for blacks), and schools (can you be my fellow student? or my child's playmate?); all of which are roles. Blacks and whites currently have few disagreements at the level of norms, specifying different patterns of behavior for all Americans; or the level of values. In fact, most studies find consistency in black and white

values. Hence, the major disagreements are about roles, and the blacks are sensitive to this fact. The whites, on the other hand, are not sensitive to this fact, and infer that the critical disagreements are at the level of values (as predicted by Smelser.)

Hypothesis III assumed that the subjects would give about the same responses to conversations 5, 6, 7 and 8, because each of these conversations includes a disagreement at the level of facilities, and such disagreements are projected to higher levels of abstraction, i.e., the subjects consider them as cues of more fundamental disagreements. Conversation 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$) did of course have three more disagreements than conversation 8 ($\overline{F}$, R, N, V), so that this hypothesis might be a bit too bold. Analyses of variance, parallel to those shown in Table 4, were computed only on the data of conversations 5, 6, 7 and 8.

The results failed to conform to the prediction on three of the dependent variables. Main effects for conversation type occurred in the evaluative dynamism of Jack by George, respect for Jack by George, and hostility toward George by Jack variables. The pattern of the means, however, strongly suggested that the effect was caused by the subjects' extremely negative responses to conversation 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$) only. This was confirmed by a simple effects analysis on each of these three dependent variables. Thus the effect of disagreement at all four levels of abstraction was more powerful than predicted for these three dependent variables. The other four variables (global evaluation of George by Jack, intimate friendship, hostility toward Jack by George, and superordination of Jack to George and subordination of George to Jack) conformed to the prediction. None of the other main effects obtained in the original analysis (see Table 4) were significant. However, first-order interactions involving conversation type

and race of George were consistent across the dependent variables. Since these interactions directly concern confirmation of the fourth hypothesis, they are discussed more fully below. Finally, it must be noted that the test of the hypothesis of no difference in the means for conversations 5 through 8 is very weak because it requires confirmation of the null hypothesis. However, the occurrence of five main effects for conversation type out of seven dependent variables in the first analysis of variance (Table 4) compared to three in the present analysis lends support for hypothesis III.

Hypothesis IV stated that the effect of disagreement on the subjects' attributions should have been greater when Jack and George were both white and lesser when Jack was white and George black. This was predicted from the assumption that if outwardly similar persons interact, there is a very high expectation that the persons will agree on most issues whereas a much lower expectancy would be generated if the interactors are outwardly dissimilar. With a high expectancy of agreement, any evidence of disagreement would be a strong disconfirmation of the expectancy and imply to subjects that the conflict was broader and more deep-rooted than the context of the disagreement would imply. On the other hand, with a low expectancy of agreement, any evidence of disagreement tends to confirm the expectancy and thus does not affect the subjects' attributions. Because of perceptual cues related to the race of the stimulus persons, it was assumed that when Jack and George were both white, greater similarity would be perceived by the subjects than when Jack was white and George was black. Finally, we speculated that this effect should interact with the given order of disagreements and agreements, such that for conversation 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$), similarity will be the sole factor in the subjects' attributions while for conversations 6 ($\overline{F}$, $\overline{R}$, $\overline{N}$, V), 7 ($\overline{F}$, $\overline{R}$, N, V), and 8 ($\overline{F}$, R, N, V), similarity will interact with order in varying degrees (since the number of agreements increases).

Conversations 5 through 8 were used to test this hypothesis since they were most similar to one another in content and had equally stepped amounts of increasing agreement from 5 (no agreements) through 8 (three agreements), respectively. Because conversation 9 contains four agreements (one at each level of abstraction), it was used as a "base rate" and the other four conversations were tested against it. Since the direction of the effect of increased disagreement was predicted, signed t-values (independent samples method) were computed by always subtracting the means for conversation 9 (F, R, N, V) from the means for the other conversations. Thus a deviation in the expected direction would be reflected by a negative t-value for the evaluative dynamism variables, the intimate friendship variable, respect for Jack variable, and the superordination-subordination variable and positive t-values for the two hostility variables in conversation 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$) only, while conversations 6, 7 and 8 should show greater t-values when George is white, but the direction is not predicted. Since there was a strong possibility, based on the subjective culture data of Triandis et al. (1970), that the base rates of conversation 9, when Jack and George were both white, could differ significantly from those for Jack white and George black, signed t-values were computed between base rates for this conversation. To further illuminate the pattern in the other four conversations signed t-values were also computed between race of stimulus person within each of the four conversations. The results of these computations are presented in Table 6. Parts A and B give the signed t-values of conversations 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$), 6, 7, and 8 ($\overline{F}$, R, N, V) for Jack and George both white and Jack white and George black, respectively, for each of the seven dependent variables. The actual means for the respective base rates are given under conversation 9 in parts A and B. Part C shows the obtained signed t-values for the computations based on the

Table 6

Signed t-tests for (A) Degree of Deviation of Four Conversations from Conversation Nine as Base Rate when Jack and George are Both White, (B) Degree of Deviation of Four Conversations from Conversation Nine as Base Rate when Jack is White and George is Black, and (C) Degree of Difference between Means for Jack and George Both White and Jack White-George Black Within Conversations. (For A and B, Conversation 9 Means were Subtracted; for C, George White Means Subtracted from George Black Means.) Note that for A and B Only, Actual Means for Conversation Nine are Given.

A. Within Race of Stimulus Person t-tests for Jack and George Both White

Dependent Variables	Conv. Five df=13	Conv. Six df=14	Conv. Seven df=13	Conv. Eight df=12	Conv. Nine (Means)
1. Global Evaluative Dynamism of George by Jack	-2.49*	.49	4.59***	2.63*	11.71
2. Evaluative Dynamism of Jack by George	-2.74*	1.81	1.81	1.50	19.85
3. Intimate Friendship between Jack and George	-4.12***	-.27	1.60	3.56**	10.85
4. Respect for Jack by George	-3.97**	2.63*	5.30***	3.19**	6.86
5. Hostility toward Jack by George	11.99***	7.76***	15.56***	2.56*	1.86
6. Hostility toward George by Jack	13.28***	4.97***	9.17***	-2.97*	5.42
7. Superordination of Jack to George and Subordination of George to Jack	-8.51***	-7.36***	-3.08**	-4.46***	14.71

B. Within Race of Stimulus Person t-tests for Jack White and George Black

Dependent Variables	Conv. Five df=18	Conv. Six df=20	Conv. Seven df=17	Conv. Eight df=18	Conv. Nine (Means
1. Global Evaluative Dynamism of George by Jack	-4.49***	2.16*	-9.07***	1.20	15.00
2. Evaluative Dynamism of Jack by George	-9.25***	3.22**	-2.83*	.43	19.08
3. Intimate Friendship Between Jack and George	-1.87	4.94***	-.86	1.79	7.42
4. Respect for Jack by George	-3.79**	6.25***	-1.98	2.04	6.25
5. Hostility toward Jack by George	-1.81	-.82	-1.98	-1.30	8.92
6. Hostility toward George by Jack	1.96	-3.76**	1.03	-.26	11.83
7. Superordination of Jack to George and Subordination of George to Jack	0.00	1.88	-.78	-1.28	11.50

Table 6 (Continued)

C. Between Race of Stimulus Person Within Conversation Number (George Black - George White)

Dependent Variables	Conv. Five df=16	Conv. Six df=17	Conv. Seven df=13	Conv. Eight df=13	Conv. Nine df=17
1. Global Evaluative Dynamism of George by Jack	1.93	4.47***	-13.03***	.33	2.88**
2. Evaluative Dynamism of Jack by George	-4.89***	.35	-4.77***	-2.69*	-.60
3. Intimate Friendship Between Jack and George	-.35	1.07	-5.38***	-4.94***	-3.01**
4. Respect for Jack by George	.44	1.44	-11.65***	-3.18**	-.81
5. Hostility toward Jack by George	-4.36***	1.00	-2.66*	6.90***	9.00***
6. Hostility toward George by Jack	-1.96	.43	-3.07**	9.21***	9.13***
7. Superordination of Jack to George and Subordination of George to Jack	4.75***	4.07***	-1.81	-2.78*	-5.35***

*p < .05, two-tailed test
**p < .01, two-tailed test
***p < .001, two-tailed test

difference within each conversation between the means when Jack and George were both white and when Jack was white and George black ("George white" means were always subtracted from "George black" means). All significance tests in Table 6 were two-tailed due to some reversals in the predicted direction.

Let us first examine the differences in the base rates of conversation 9 (all agreements). The means in parts A and B clearly indicate that the attributions of the subjects differed on the dependent variables depending on the race of George. Part C indicates both the direction and size of the discrepancy after standardization. In general, the "base rate" differences were in the direction predicted by hypothesis IV.[3] The one exception was global evaluative dynamism of George by Jack. Subjects attributed significantly more positive global evaluative dynamism when George was black than when he was white. We shall return to this problem at a later point.

For conversation 5 ($\overline{F}$, $\overline{R}$, $\overline{N}$, $\overline{V}$), the predicted direction of the discrepancy from the "base rates" was confirmed when Jack and George were both white for all dependent variables and for all but one when Jack was white and George black (hostility toward Jack by George was in the negative direction but not significant). However, the size of the t-values did not conform to the hypothesis that disagreements occuring between otherwise similar stimulus persons would have a greater effect than disagreements between dissimilar

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[3] Four of the dependent variables had t-values that indicated when George was black, the "base rate" of four agreements was less than when George was white. Two of these negative t-values were significant (see Table 6) confirming that subjects attributed significantly less intimate friendship and subordination when the stimulus persons were dissimilar in appearance and in spite of perceived agreement on issues. The remaining three dependent variables had significant positive t-values. Two of these were the "hostility" dependent variables. Since these two variables were reverse scored (i.e., a high score indicates greater hostility), they also supported the assumption of more negative attributions in the face of agreement if the stimulus persons are dissimilar on another dimension.

stimulus persons for all dependent variables. For the two evaluative dynamism variables the pattern was reversed (see parts A and B of Table 6). Part C of Table 6 suggests that the reversal for dependent variable one may have been due to differences in "base rate" but it clearly cannot account for the reversal in dependent variable 2. The remaining dependent variables appear to conform to the similarity of stimulus persons hypothesis, but only the "hostility toward Jack by George" dependent variable has a t-value difference that cannot be attributed to the "base rate" difference. Thus it appears that for conversation 9, involving four agreements, subjects attributed much lower levels of interpersonal attraction when George was black than they did when he was white and the effect of total disagreement was to reduce the subjects' levels of attributed interpersonal attraction when George was white to the levels when George was black which were stable regardless of agreement or disagreement.

In conversations 6 ($\overline{F}$, $\overline{R}$, $\overline{N}$, V), 7 and 8 ($\overline{F}$, R, N, V), the interaction between degree of similarity in stimulus persons and order of agreements and disagreements was predicted to operate most strongly. When George was white, dependent variables 1, 3, and 4 appeared to be most strongly affected by the order of disagreements and agreements in conversation 8; dependent variables 1 and 4 in conversation 7; and dependent variable 4 only in conversation 6. For these variables disagreement followed by agreement at higher levels of abstraction produced significantly more positive levels of interpersonal attraction than did four agreements. At the same time the subjects were attributing greater evaluation, friendship, and respect for these three conversations, they were attributing greater hostility between the stimulus persons and less subordination of George to Jack. Thus, for the more "formal" behaviors (evaluation, intimate friendship, and respect) the order of the agreements and disagreements was the most salient cue whereas for the more

"intimate" behaviors (hostility toward Jack by George, hostility toward George by Jack, and superordination of Jack to George and subordination of George to Jack), the negative effects of the disagreements were the most salient cue. Again we have a case similar to the findings of Triandis and Davis (1965) in that the weights of the cues changed with increases in the intimacy of the behaviors.

When George was black, conversations 6 ($\overline{F}$, $\overline{R}$, $\overline{N}$, V), 7, and 8 ($\overline{F}$, R, N, V) were somewhat more in line with the hypothesized interaction. In conversation 8, the t-values tended to be in the correct direction so that a disagreement at the level of facilities followed by agreement at the other three levels produced more positive evaluative attributions (dependent variables 1 and 2), greater attributions of intimate friendship and respect (dependent variables 3 and 4), and less hostility (dependent variables 5 and 6). The fact that these differences were not significant compared to t-values in Part A supports the interaction interpretation. Conversation 7 has signed t-values that do not support the order effect hypothesis in general while conversation 6 supports it significantly (see Part B, Table 6). It seems clear at this point that the particular level of abstraction on which the disagreement occurs has a strong effect on the interaction when George is black. Conversation 7 ($\overline{F}$, $\overline{R}$, N, V) illustrates this clearly. Here a conflict over facilities and roles followed by agreement over norms and values led to attributions centered on the disagreements per se and order had no apparent effect.

Thus, Table 6 indicates evidence for the interaction hypothesis although other factors appear to redefine the focus of subjects' attributions in specific conversations. The significant race of subject x conversation type interactions reported earlier for hypothesis III provide further confirmation of the results given in Table 6.

The support for hypothesis IV is equivocal, however. It may be argued that the significantly lower base rates for conversation 9 (F, R, N, V) when George was black may have made it more difficult for significant negative t-values to occur due to a floor effect. This argument also has flaws, however, when the actual means for conversation 9 are considered. The scale ranges from 0 to 36 for the first three dependent variables and 0 to 18 for the last four. The actual means of the "base rates" were sufficiently close to the scale midpoints to allow for deviations in either direction. Furthermore, the lowest score lies within the "base rates" for a white George rather than a black George.

Discussion of Study II

All of the hypotheses for this study were partially confirmed. Restrictions in sample size, however, made it impossible to check some interesting aspects of the results. For example, in hypothesis II, race of George had to be collapsed in order to obtain a stable estimate of the means for the rank-order correlations. In hypothesis II, some interesting deviations occurred when race of subject and race of George were considered separately, but the degrees of freedom were so truncated and the mean estimates lacked stability to an extent that no conclusions could be drawn. Finally in hypothesis IV, sample size again precluded further separation by race of subject.

One of the most striking findings of this study, however, was that even when there was perceivable agreement by the two stimulus persons at all levels of abstraction, subjects attributed much lower levels of interpersonal attraction when one of the stimulus persons was black than when both were white. This is directly contrary to Rokeach's theory of prejudice. The effects of disagreement were less clear, but a stable finding is that the effects of disagreement can be dissipated in most cases if they are followed by perceived agreement at some higher level of abstraction.

Finally, it seems clear that derivations from Smelser's (1963) theory concerning levels of abstraction and their effect on interpersonal attraction were generally supported. There appear to be, however, some differences in support received from analyses of black samples.

General Discussion

The outcome of the two experiments has some clear implications for cultural training in industrial settings.

1. It is desirable to reduce the tendency of persons taking the training to perceive rather negative replies to requests for help as more positive when a member of a different racial group is the requester (Experiment I).

2. Attempts should be made to reduce the tendency for whites to perceive a patronizing reply to a request for help (warm-controlling) as a positive reply when the requester is a black (Experiment I).

3. White supervisors should learn to emphasize areas of perceived agreement at higher levels of abstraction, especially after a disagreement at a lower level. This appears to be especially true when the disagreement is over roles (Experiment II).

4. We should attempt to reduce the tendency of both blacks and whites to perceive and expect conflict and low levels of interpersonal attraction between a black person and white person even when there is total agreement perceived in their interaction (Experiment II).

5. Both blacks and whites should learn, to perceive, that disagreements at lower levels of abstraction do not imply disagreements at higher levels of abstraction (Experiment II).

In general, these conclusions for training are also supported by the data on subjective cultures (Triandis, Feldman & Harvey, 1970, 1971a; Triandis, Weldon, Feldman, & Harvey, in preparation).

The two experiments also clearly indicate that attributions in the domain of interpersonal attraction tend to be very complex. The large number of higher order interaction in Experiment I indicate that it is especially complex in the "asking for help" domain. The results of Experiment II indicate that even when only a main effect occurs it is subject to complex causes. This complexity has both good and bad consequences for use of the technique in validating the training tasks. On the credit side the complexity allows tests of shifts in several dimensions in the trainee's response pattern after training. On the debit side is the uncertainty of replication of the more complex interactions and determining the source of a shift with a high degree of certainty.

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APPENDIX A

Specific Results of Analyses in Experiment I

Because the results to be presented in this Appendix contain so many complex interactions, we shall present some of the general trends in the analysis prior to actual presentation of the data. All of these trends were generated from post-hoc analyses and therefore should not be construed as hypotheses that were tested by the data. We present them at this point simply to guide the reader in interpreting the results.

The general trends are presented in terms of the simplest main effect or interaction that was consistent across the seven dependent variables. However, it should be kept in mind that many of these effects are nested within more complex interactions. It is hoped that this method of presentation will aid in understanding the more complex data. Finally, in the body of the results, the trends supported by a datum will be specifically noted.

The following trends are not presented in any specific order of importance although specific cultural differences are presented first:

Trend 1. White subjects were, in general, more sensitive to the degree of autonomy in Jack's reply than the black subjects were. That is, white subjects tended to perceive an autonomous response as very positive compared to a controlling response. Black subjects perceived much less difference between the two. On the other hand, black subjects had a slight tendency to be more sensitive to the degree of warmth in the reply. This tendency was not nearly as strong as the white subjects greater sensitivity to the degree of autonomy, but this may have been due to the effect of other factors that would tend to suppress the effect (this problem was discussed in greater detail in the main body of this report).

Trend 2. If the stimulus person requesting help (George) was a member of the same race as the subject, the relationship between the two stimulus

persons was seen as much more negative than if George was a member of a different racial group than the subject. In general this trend depended very strongly on the type of reply given by Jack. It was especially true in the more negative replies such as warm-controlling, cold-autonomous, and cold-controlling. The effect tended to disappear when the reply was warm and autonomous.

Trend 3. For the more intimate behaviors (hostility toward Jack by George, hostility toward George by Jack, and superordination of Jack to George and subordination of George to Jack) a stable and significant main effect for race of George emerged. When George was black, greater hostility and less subordination was perceived by the subjects than when George was white. This trend confirmed earlier data obtained by Triandis and Davis (1965) that race of the stimulus person is a strong determinant of attributions when the behavior intentions are intimate. This trend was modified only slightly by the other independent variables including race of subject, role played by Jack, and sex of experimenter. The lack of complexity in most of the higher order interactions in the intimate behaviors when George was black further supports this trend.

Trend 4. There was a strong tendency for the subjects' perception of Jack's reply to be modified by his role. When Jack was a foreman, the subjects were much more sensitive to the differences between the four replies Jack made. This was especially true when Jack's replies were either cold and autonomous or cold and controlling. In other words, when Jack's reply was cold and autonomous or cold and controlling, the subjects perceived very little difference in evaluation or behavioral intentions if Jack was in a coworker role. However, if Jack was a foreman, very strong distinctions were made between the two replies by the subjects.

Global evaluative dynamism of George by Jack. The results of the analysis of variance are presented in Table 1 (only those interactions which were significant are presented in the summary table) and the means for each cell are presented in Table 2. The grand mean for this variable was 13.56 which can be compared with a scale midpoint of 18.0 (since four variables were summed, the midpoint is four times the midpoint of the nine-point scales). This implies that the perception of the global evaluative dynamism of George by Jack by the subjects was generally negative. This was clearly indicated by the cell means of Table 2. Only the cells related to warm-autonomous responses by Jack exceed the midpoint of 18.0. This fact should be kept in mind when interpreting the results to follow. Finally, it was clear that this dependent variable was not simply the reciprocal of the second dependent variable (evaluative dynamism of Jack by George). Dependent variable one contained the respect dimension of the behavioral differential while the second dependent variable did not (respect of Jack by George was orthogonal to the second dependent variable and thus appeared as a variable in its own right). The importance of this fact is discussed in greater detail below, concurrent with discussion of the evaluative dynamism of Jack by George.

The analysis of variance summarized in Table 1 indicated that the degree of warmth and degree of autonomy main effects controlled most of the systematic variance[1] in the experiment. Thus, the manipulations introduced

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[1] Two estimates of the percent of systematic variance accounted for by each effect are given in the analysis of variance tables. The first is the traditional ω^2 (Winer, 1962). The second estimate is based on the traditional R^2 of regression analysis. It indicates the percent of variance controlled by the effect within the block of effects controlled by a single error term. Since ω^2 severely underestimates the percent of variance in a mixed design, both ω^2 and R^2 are represented as estimates of a lower and upper bound to the estimate, respectively.

Table 1

Analysis of Variance Summary Table for

Global Evaluative Dynamism of George by Jack

Variance Accounted for by ω^2/R^{2b}	Source of Variation	df	Mean Square	F Ratio
	Race of Subject(A)	1	57.694	
	Role Played by Jack(B)	1	72.506	
	Race of George(C)	1	.856	
	Sex of Experimenter(D)	1	218.275	2.875
.008/.032	A X B X C	1	356.461	4.694*
.008/.028	A X B X D	1	307.574	4.050*
	S's Within Groups	140	75.937	
.198/.496	Degree of Warmth(E)	1	4160.556	138.486**
.008/.032	C X E	1	137.373	4.572*
	E X S's within groups	140	30.043	
.216/.524	Degree of Autonomy vs. Control(F)	1	4691.947	154.212**
.015/.058	B X F	1	260.975	8.570**
	F X S's within groups	140	30.425	
.016/.060	E X F	1	164.370	9.016**
.008/.029	B X E X F	1	75.877	4.162*
.009/.037	A X C X E X F	1	97.752	5.362*
.015/.056	A X D X E X F	1	151.474	8.308**
	E X F X S's within groups	140	18.232	

[a]Due to unequal cell frequencies, the approximate method of unweighted means ANOVA was computed (Winer, 1962, pp. 222-224).

[b]Percent variance calculated only for significant effects. Two estimates are shown (see Footnote 1).

*p < .05
**p < .01

Table 2

Cell Means for Global Evaluative Dynamism of George by Jack

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman — Race of Worker: Black — Warm	Foreman — Black — Cold	Foreman — White — Warm	Foreman — White — Cold	Worker — Race of Other Worker: Black — Warm	Worker — Black — Cold	Worker — White — Warm	Worker — White — Cold
Black	Male	Autonomous	20.91[a] 11[b]	15.72 11	23.62 8	19.87 8	19.54 11	11.91 11	15.38 8	11.62 8
		Controlling	13.81 11	6.54 11	17.75 8	7.88 8	13.27 11	10.27 11	13.50 8	8.12 8
	Female	Autonomous	19.70 10	9.80 10	14.10 10	12.10 10	2.50 12	11.16 12	17.11 9	10.44 9
		Controlling	14.10 10	5.30 10	7.90 10	8.50 10	13.17 12	10.25 12	10.67 9	8.67 9
White	Male	Autonomous	21.72 11	14.54 11	20.40 10	13.30 10	20.12 8	12.12 8	20.11 9	11.11 9
		Controlling	12.63 11	9.27 11	11.20 10	8.50 10	13.87 8	7.62 8	14.55 9	12.22 9
	Female	Autonomous	21.00 10	17.40 10	20.00 10	12.90 10	16.40 10	11.40 10	19.44 9	15.88 9
		Controlling	15.30 10	6.80 10	11.50 10	10.90 10	9.70 10	8.30 10	13.22 9	10.33 9

[a] Cell means

[b] Number of subjects per cell

by the E were successful. This pattern, with variations, appeared throughout the seven dependent variables. However, these main effects also interacted with one or more other independent variables within each dependent variable. Therefore, before comment on the main effects for degree of warmth and degree of autonomy, the higher order interactions will be analyzed and discussed.

Two third-order interactions are significant for this dependent variable. The first was a race of subject x race of George x degree of warmth x degree of autonomy interaction. A graph of the means is presented in Figure 1.[2] The pattern of the means in Figure 1 indicated that the interaction was caused by differential attributions of global evaluative dynamism of George by Jack by the subjects that depended on the race of George when Jack's reply was warm and autonomous or cold and controlling. Specifically, black subjects attributed less evaluative dynamism when George was white and Jack's reply was warm and autonomous. White subjects attributed greater evaluative dynamism when George was white and Jack's reply was cold and controlling (see Figure 1). This interpretation was confirmed by significant simple, simple race of George x degree of warmth interactions within the black subject-autonomous and white subject-controlling cells of race of subject x degree of autonomy ($F = 6.38$; $p < .05$[3] and $F = 4.73$; $p < .05$, respectively). That the differential attributions of the Ss occurred when George was white was suggested by pattern of the means (Figure 1) and confirmed by a significant simple A X E X F interaction within the George-white level of C ($F = 5.77$; $p < .05$).

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[2] All figures are presented by levels of one of the factors for ease of interpretation. Choice of the specific factor was determined by the simple effects analysis and by the lower order interactions that were contained within the figure.

[3] All simple effect F-tests for this experiment have 1 and 140 degrees of freedom.

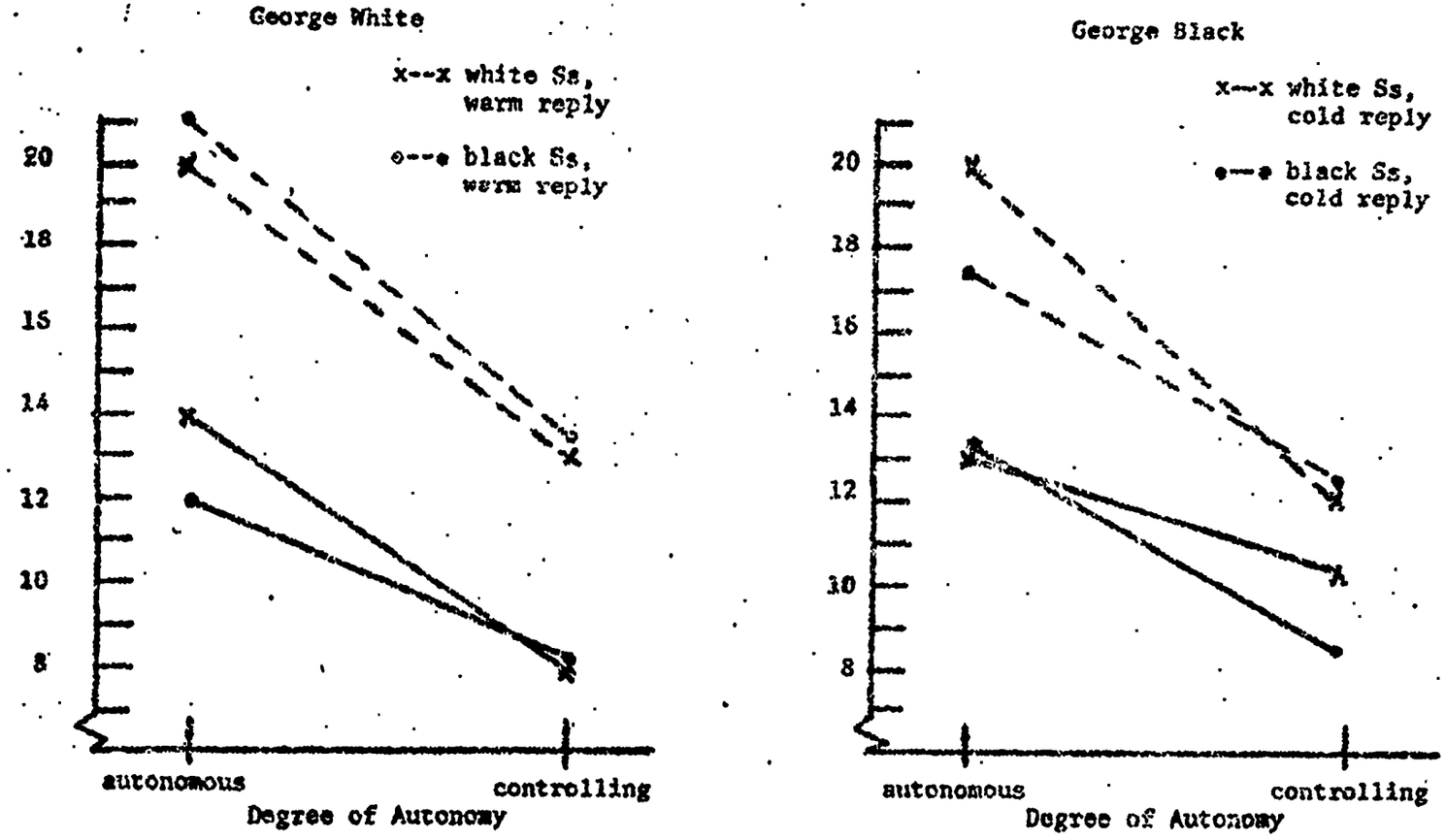

Figure 1. Graphic representation of the effect of race of subject x race of George x degree of warmth x degree of autonomy on global evaluative dynamism of George by Jack. Levels of race of George are graphed separately.

Figure 1 implies that the global evaluative dynamism of George by Jack in the warm, autonomous condition was significantly more negative when George was white and the S's were black and in the cold, controlling condition was significantly more positive when both George and the Ss were white. The pattern of means and simple effects for this interaction neither supports nor disconfirms the two cultural differences of Trend 1. Here the effect depended on the cells of degree of warmth or degree of autonomy, and some reversals of the trend are observable (see Figure 1).

The differential attributions by the black Ss and white Ss when George is white to the warm, autonomous and cold, controlling conditions, respectively, was strong enough to cause the race of George x degree of warmth interaction in Table 1. The pattern of this interaction can be derived from Figure 1. The previous analysis suggested that the interaction was due to the subjects' greater sensitivity to the degree of warmth dimension when George was black and the less polarized attributions when George was white.

Finally the degree of warmth and degree of autonomy simple main effects were significant in all levels of the race of subject x race of George x degree of warmth x degree of autonomy interaction. However, the simple degree of warmth x degree of autonomy interaction was significant only at the white S's level of race of subject ($F = 8.35$; $p < .01$), and at the George white level of race of George ($F = 75.06$; $p < .01$). This pattern suggested that the degree of warmth x degree of autonomy interaction in Table 1 was due to the more positive perception of a cold, autonomous reply by the white subjects, particularly if George was white. This fact was interpreted as partial support for the first part of Trend 1 (the white subjects greater sensitivity to the degree of autonomy).

The other third order interaction in Table 1 was a race of subject x sex of experimenter x degree of warmth x degree of autonomy interaction. The pattern of means for this interaction is presented in Figure 2. An analysis of the simple effects and interactions indicated that this interaction was due to the differential attributions of the black Ss depending on the sex of the experimenter and the levels of the degree of warmth and degree of autonomy in Jack's reply. This was confirmed by a simple main effect for sex of experimenter ($F = 4.92$; $p < .05$) and a simple sex of experimenter x degree of warmth x degree of autonomy interaction ($F = 7.27$; $p < .01$) for the black subjects. Black subjects gave more positive attributions of global evaluative dynamism (see Figure 2) when the experimenter was male in all levels of degree of warmth x degree of autonomy except the cold-controlling condition where the means were essentially identical (female = 8.18 and male = 8.20). White subjects responses to the sex of the experimenter were undifferentiated. Only the simple degree of warmth x degree of autonomy interaction was significant at the white subjects level of A ($F = 8.33$; $p < .01$). The simple main effects for degree of warmth and degree of autonomy were significant at all levels tested as were the simple degree of warmth x degree of autonomy interactions.

Three second-order interactions were significant for this dependent variable. The first of these was a significant role of Jack x degree of warmth x degree of autonomy interaction. The pattern of the means for this interaction is graphed in Figure 3. Inspection of the pattern of the means and analysis of the simple effects indicated that the interaction was due to a shift in the response by the subjects to Jack's status when Jack gave either a cold-autonomous or a cold-controlling response to George's query when Jack was a worker. Specifically, subjects attributed more equal

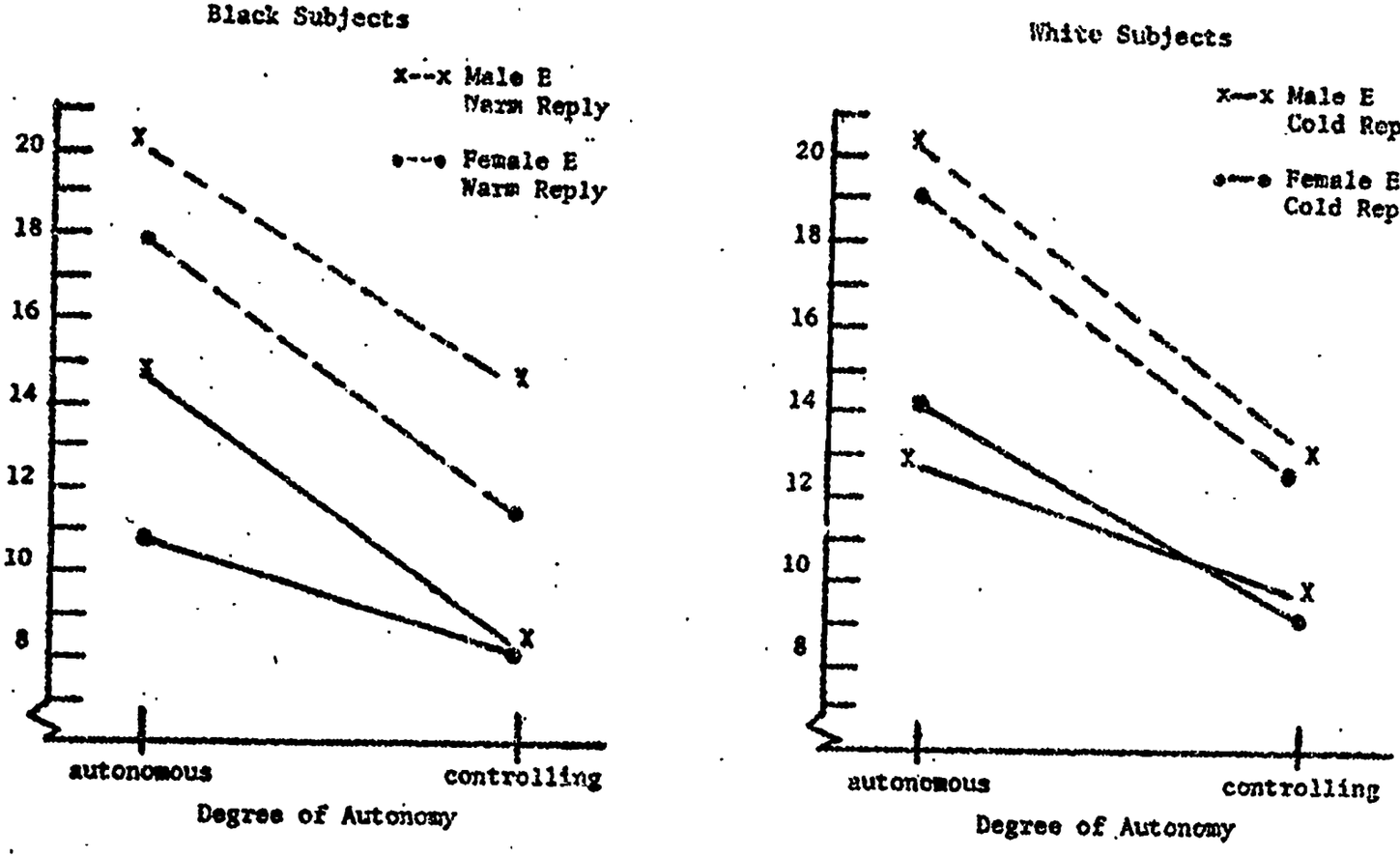

Figure 2. Graphic representation of the effect of race of subject x sex of experimenter x degree of warmth x degree of freedom on global evaluative dynamism of George by Jack. Levels of race of subject are graphed separately.

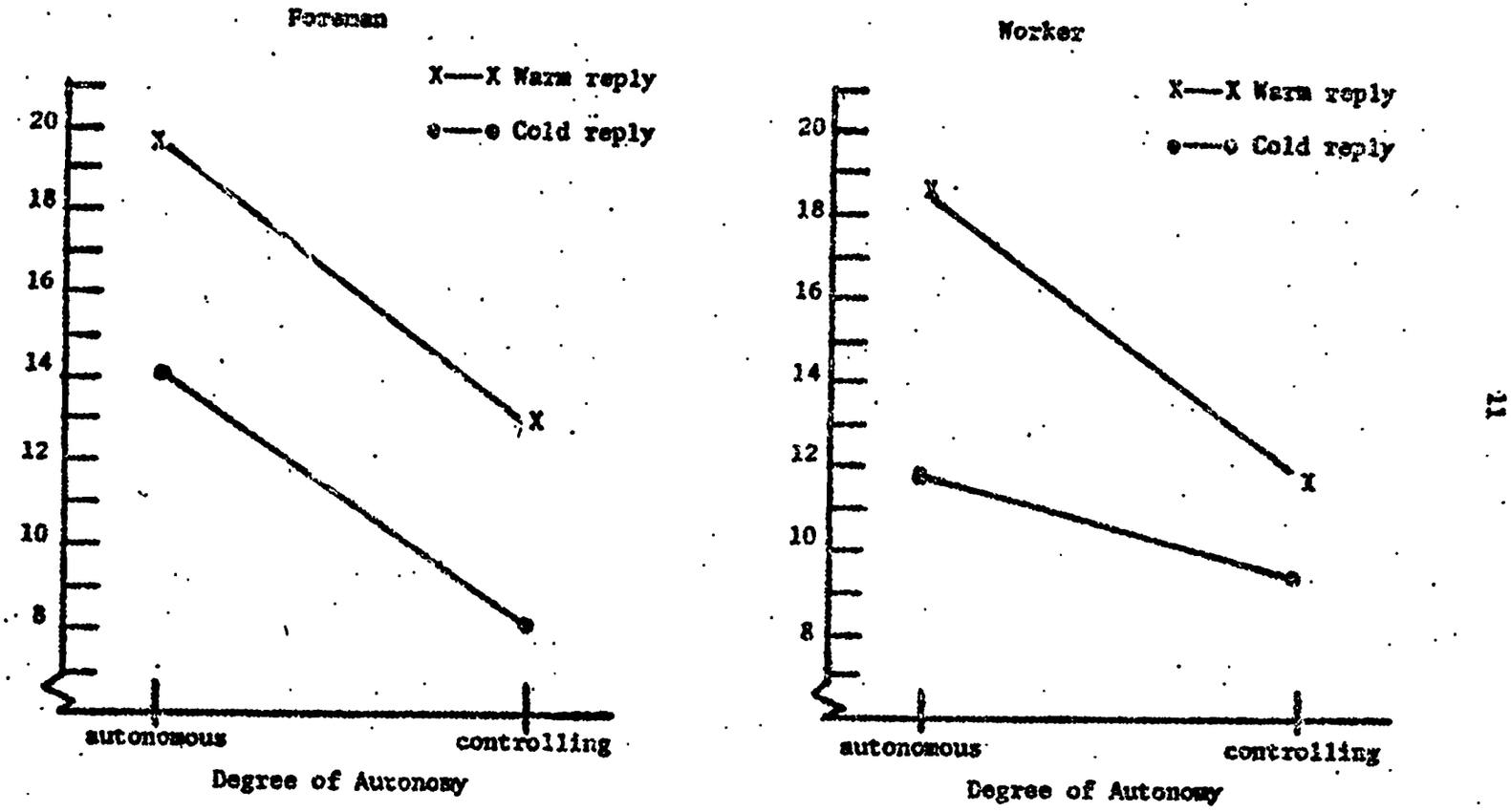

Figure 3. Graphic representation of the effect of role played by Jack x degree of warmth x degree of autonomy on global evaluative dynamism of George by Jack. Levels of role played by Jack are graphed separately.

evaluative dynamism when the reply was cold and autonomous or cold and controlling than would be predicted by a main effects model.[4] These findings were confirmed by a simple role played by Jack x degree of autonomy interaction at the cold level of degree of warmth only ($F = 12.71$, $p < .01$). This pattern is the first confirmation of Trend 4 (less differentiation in the worker role). It was the simple role played by Jack x degree of autonomy (B X F) interaction at the cold level of degree of warmth that was responsible for the B X F interaction in Table 1. The pattern of the means for the B X F interaction and the simple effects and interactions are easily derived from Figure 3.

Another significant second-order interaction was the race of subject x role played by Jack x race of George interaction. The pattern of the means in Figure 4 suggested that if the subject was of the same race as George, and if there was equal status between Jack and George (coworkers), then more positive global evaluative dynamism of George was attributed to Jack than if the subject was of a different race than George. This analysis was confirmed by a significant simple race of subject x race of George interaction at the worker level of Jack's role ($F = 4.28$, $p < .05$). The pattern of the means in Figure 4 also suggested that when Jack and George are of unequal status (Jack a foreman), then if the subjects were of a different race than George, more positive global evaluative dynamism of George was attributed to Jack than if the subject was of the same race as George. This effect, however, was only

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[4] By a main effects model we mean that the pattern of the means for Figure 3 should be a linear sum of the main effects. Indeed this occurred when Jack was a foreman as indicated by the parallel lines in Figure 3 for the foreman level of role played by Jack. This parallel pattern should also occur for the worker level if a main effects model is predicted. The choice of the cold-autonomous and cold-controlling cells as the cause of the non-linear fit is based on the pattern in the other cells where slightly more positive responses were made when Jack was a foreman than when he was a worker. It was clear from Figure 3 that this pattern was reversed in the cold-controlling cell. All further references to a main effects model in the text refer to this type of analysis.

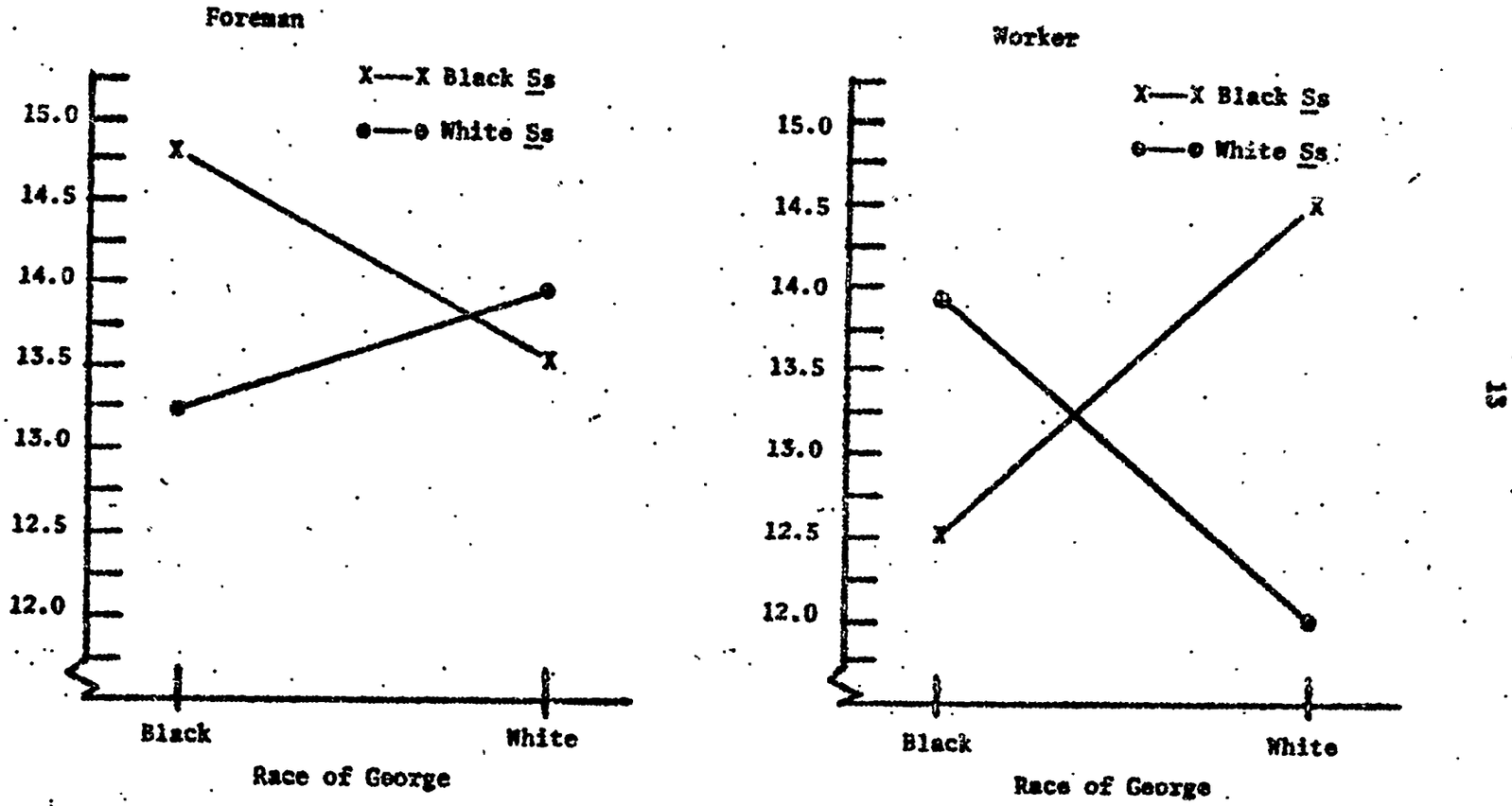


Figure 4. Graphic representation of the effect of race of subject x role played by Jack x race of George on global evaluative dynamism of George by Jack. Levels of role played by Jack are graphed separately.

marginally significant as suggested by the simple A X C interaction at the foreman level of B ($F = 3.03$, $p < .07$). This, however, was the first evidence of Trend 3 and is noted at this time. The reversal of Trend 3 when Jack was a coworker (see above) did not occur again.

The final significant second-order interaction was a race of subject x role of Jack x sex of experimenter interaction. The pattern of the means for this interaction is presented in Figure 5. The source of the interaction was confined primarily to the black subjects who attributed more positive global evaluative dynamism when a male experimenter was present than when a female experimenter was present and Jack was a foreman. When Jack was a worker or when white subjects were responding, no differential effects were observed that were significant (see Figure 5). This was confirmed by a significant simple, simple main effect for sex of experimenter within the black subjects-foreman cell of race of subject x role played by Jack ($F = 4.92$, $p < .05$) and by a significant simple role played by Jack x sex of experimenter interaction for black subjects ($F = 4.57$, $p < .05$).

The degree of warmth x degree of wutonomy interaction reported in Table 1 has been discussed previously in terms of the role played by Jack x degree of warmth x degree of autonomy, the race of subject x sex of experimenter x degree of warmth x degree of autonomy, and the race of subject x race of George x degree of warmth x degree of autonomy interactions. It seems clear at this point that the E X F interaction was due to the differential responses in those higher order interactions.

Evaluative dynamism of Jack by George. The results of the analysis of variance for this dependent variable are presented in Table 3 (again only those interactions which were significant are presented in the summary table), and the means are presented in Table 4. The grand mean for this variable

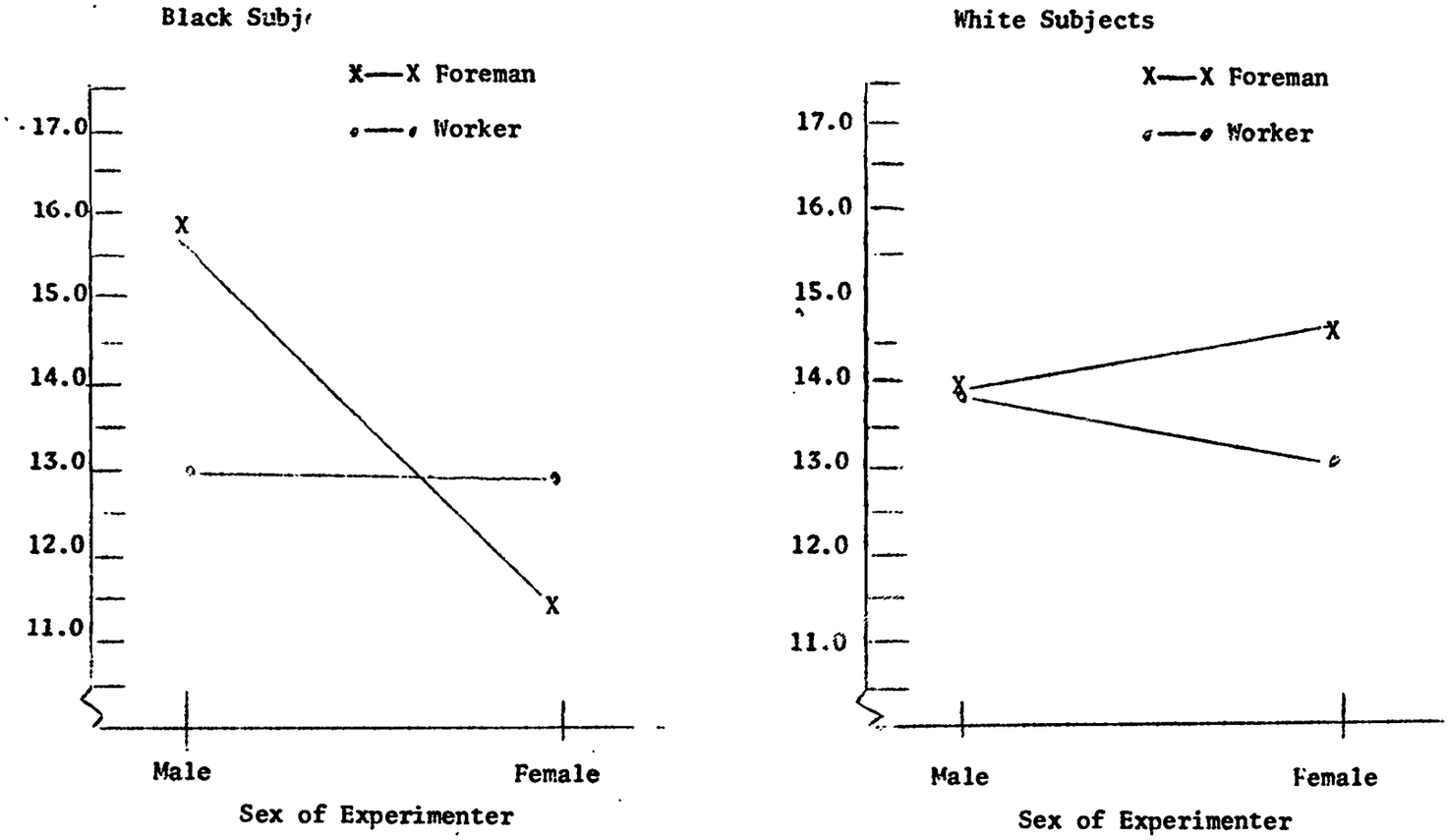


Figure 5. Graphic representation of the effect of race of subject x role played by Jack x sex of experimenter on global evaluative dynamism of George by Jack. Levels of race of subject are graphed separately.

Table 3

Analysis of Variance Summary Table for

Evaluative Dynamism of Jack by George[a]

Variance Accounted for by ω^2/R_{xy}[b]	Source of Variation	df	Mean Square	F Ratio
.009/.035	Race of Subject (A)	1	519.985	5.022*
	Role Played by Jack (B)	1	4.291	
	Race of George (C)	1	6.332	
.013/.049	Sex of Experimenter (D)	1	65.34	
	A X C	1	746.759	7.212**
	Subjects Within Groups	140	103.537	
.137/.389	Degree of Warmth (E)	1	2734.084	89.102**
.008/.033	A X C X E	1	144.780	4.718*
.008/.030	C X D X E	1	131.312	4.279*
	E X S's Within Groups	140	30.685	
.045/.158	Degree of Autonomy (F)	1	841.958	26.292*
	F X S's Within Groups	140	32.023	
.008/.031	B X E X F	1	134.257	4.468*
	E X F X Ss Within Groups	140	30.049	

[a]Due to unequal cell frequencies the approximate method of unweighted means was used (Winer, 1962, pp. 222-224)..

[b]Percent variance calculated only for significant effects. Two estimates are shown (see footnote 1).

*p <.05
**p <.01

Table 4

Cell Means for Evaluative Dynamism of Jack by George

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman — Race of George: Black — Warm	Foreman — Black — Cold	Foreman — White — Warm	Foreman — White — Cold	Worker — Black — Warm	Worker — Black — Cold	Worker — White — Warm	Worker — White — Cold
Black	Male	Autonomous	24.64[a] 11[b]	20.092 11	25.88 8	22.50 8	21.50 11	14.63 11	26.37 8	20.25 8
		Controlling	20.45 11	16.36 11	25.12 8	17.25 8	19.73 11	16.36 11	23.25 8	21.50 8
	Female	Autonomous	23.30 10	17.70 10	24.80 10	17.90 10	25.16 12	18.92 12	23.33 9	22.56 9
		Controlling	23.50 10	13.10 10	23.10 10	18.30 10	22.75 12	18.25 12	19.89 9	23.00 9
White	Male	Autonomous	25.73 11	24.45 11	26.70 10	23.00 10	26.62 8	24.12 8	25.22 9	18.78 9
		Controlling	24.18 11	21.63 11	25.50 10	20.50 10	22.87 8	21.75 8	24.78 9	19.55 9
	Female	Autonomous	27.20 10	26.10 10	24.10 10	18.10 10	25.40 10	21.80 10	27.67 9	23.77 9
		Controlling	26.30 10	17.50 10	20.50 10	18.10 10	24.00 10	21.50 10	18.78 9	14.11 9

[a] Cell means

[b] Number of subjects per cell

was 21.90 which is higher than the midpoint of 18.0. Clearly, the subjects attributed more positive responses within this dependent variable than they did for the more global evaluative dynamism of George by Jack. As was noted earlier, the respect dimension of the behavior differential did not load on this dependent variable as it did on the global evaluative dynamism of George by Jack dependent variable. Thus, there was a clear asymmetry in the subjects' attributions in terms of evaluative dynamism and respect. It was also not immediately clear why this was so. The pattern of the means in the significant main effects and interactions for both dependent variables suggested that the asymmetry was not due to any single variable in the design. We shall return to this problem at several points in the discussion below and in the section concerned with respect for Jack by George (dependent variable 4).

There were three significant second-order interactions for this dependent variable. The first was a role played by Jack x degree of warmth x degree of autonomy (B X E X F) interaction. The pattern of the means for this interaction is presented in Figure 6. Figure 6 suggests that this interaction was very similar to the B X E X F interaction obtained for the first dependent variable (see Figure 3). Again, a main effects model for the within subject variables (degree of warmth and degree of freedom) did not fit the data. Analysis of the simple effects indicated that the source of the discrepancy occurred in the "controlling response" cells of degree of autonomy in the interaction (in contrast, the source of the B X E X F interaction for the first dependent variable was the "cold response" cells of degree of warmth). In particular, when Jack was a worker (equal status) and gave a warm, controlling reply, the subjects attributed more negative evaluative dynamism of Jack by George than when Jack was a foreman; but when Jack gave a cold, controlling response, the subjects attributed more positive evaluative

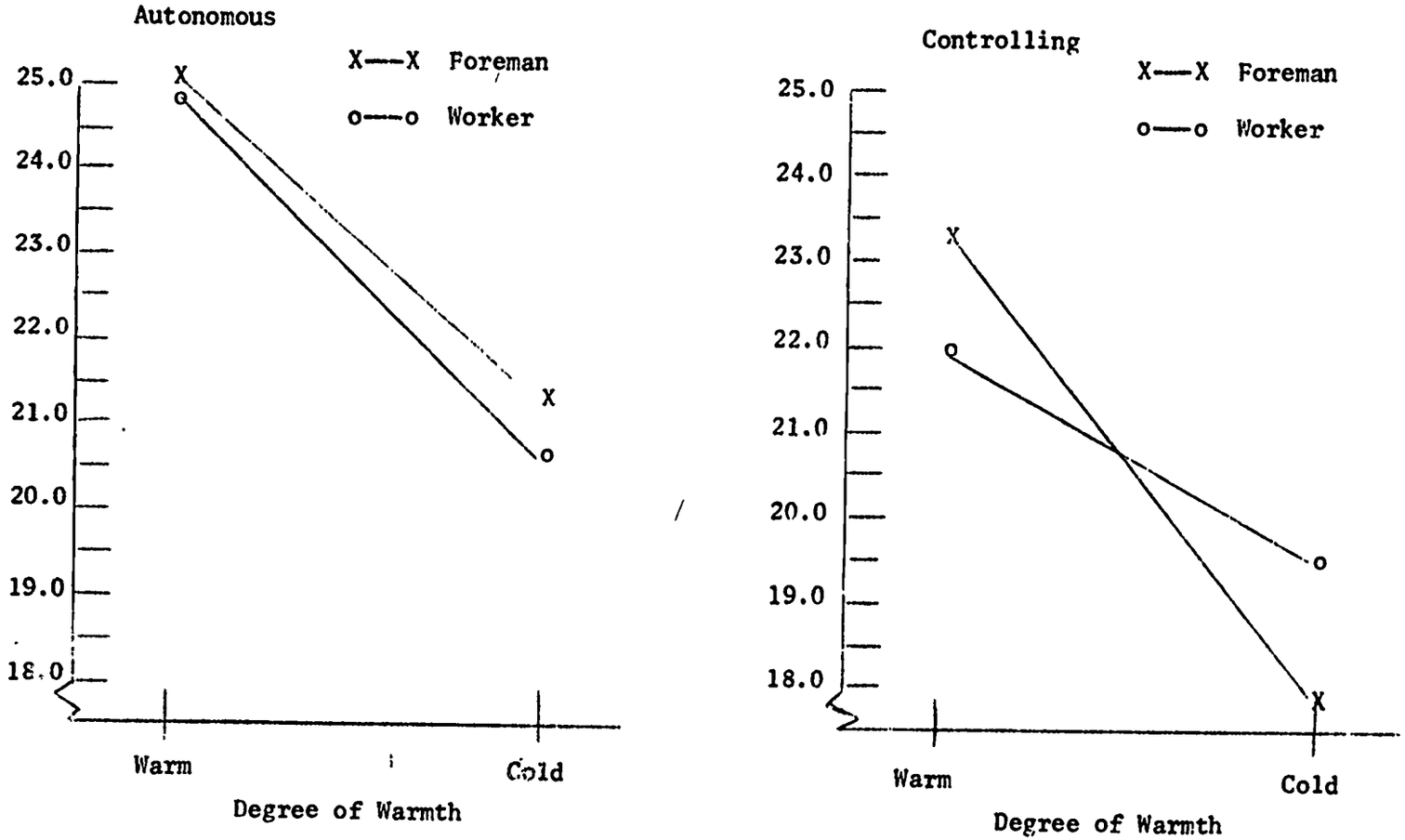


Figure 6. Graphic representation of the effect of role played by Jack x degree of warmth x degree of autonomy on evaluative dynamism of Jack by George. Levels of degree of autonomy are graphed separately.

dynamism when Jack was a worker than when he was a foreman. In contrast when Jack's reply was autonomous, no differential attributions were observed to depend on the role played by Jack (i.e., a main effects model containing degree of warmth only was sufficient to explain the data). This was confirmed by a simple role played by Jack x degree of warmth interaction at the controlling level of degree of autonomy only ($F = 6.42$, $p < .01$) and by a simple main effect for degree of warmth only at the autonomous level ($F = 10.89$, $p < .01$). This interaction provides additional support but weak support for Trend 4 (less sensitivity to the degree of autonomy in the worker role played by Jack).

The second significant second-order interaction in Table 3 was a race of George x sex of experimenter x degree of warmth interaction. The pattern of the means for this interaction is shown in Figure 7. Analysis of the simple effects indicated that this interaction was due solely to a significant simple race of subject x sex of experimenter interaction at the warm level of degree of warmth ($F = 4.73$, $p < .05$). The pattern of the means for the two levels of degree of warmth (derivable from Figure 7) and application of a main effects model suggested that the simple race of subject x sex of experimenter interaction in the warm level of E was due to more extreme attributions to the sex of the experimenter of evaluative dynamism of Jack by George when George was white and lack of differentiation based on the sex of the experimenter when George was black.

The final significant second-order interaction in Table 3 was a race of subject x race of George x degree of warmth interaction. The pattern of the means in shown in Figure 8. Analysis of the simple effects and the pattern of means indicated that the interaction was due to differential attributions by the black and white subjects to the degree of warmth in Jack's reply

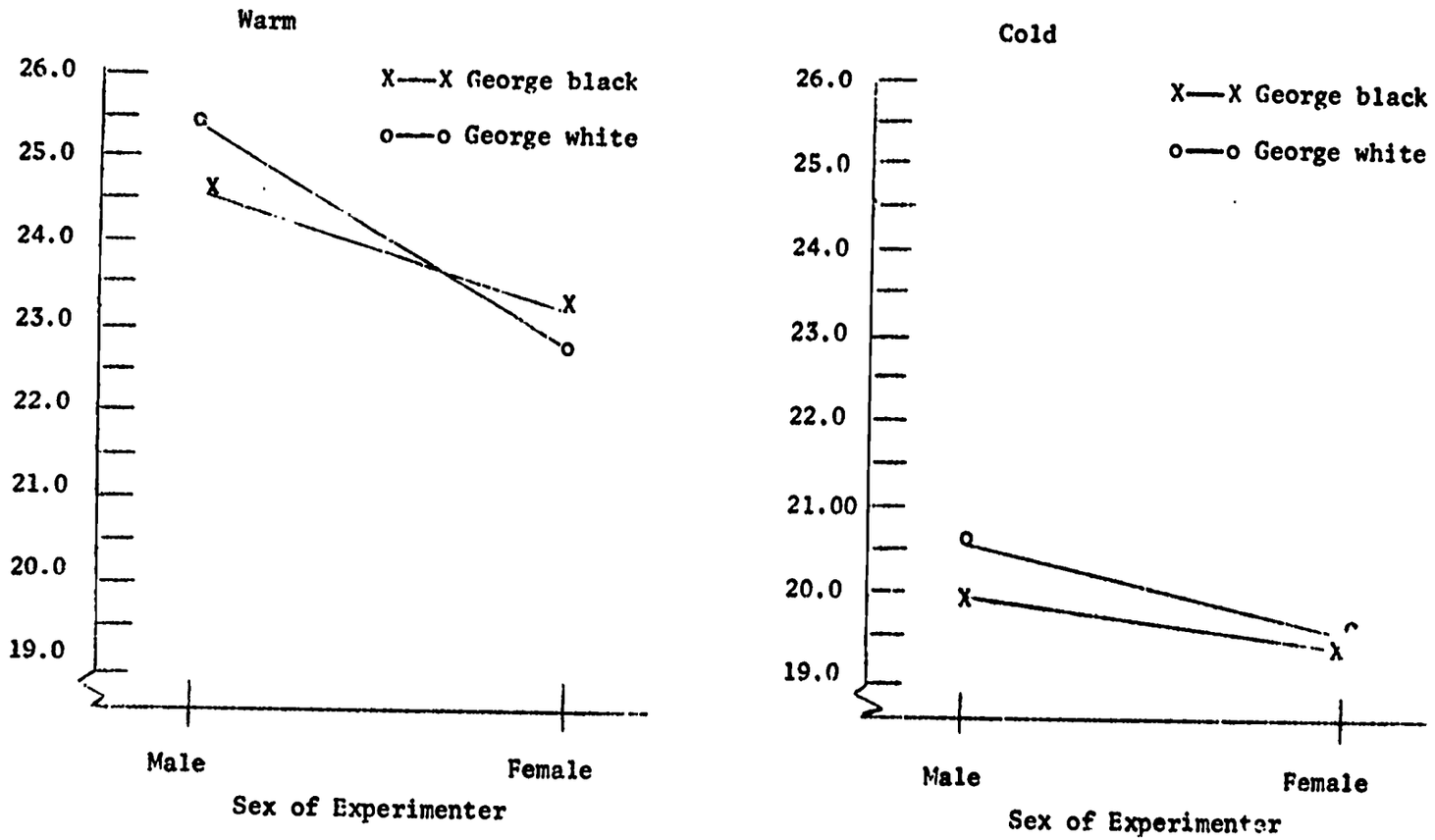


Figure 7. Graphic representation of the effect of race of George x sex of experimenter x degree of warmth on evaluative dynamism of Jack by George. Levels of degree of warmth are graphed separately.

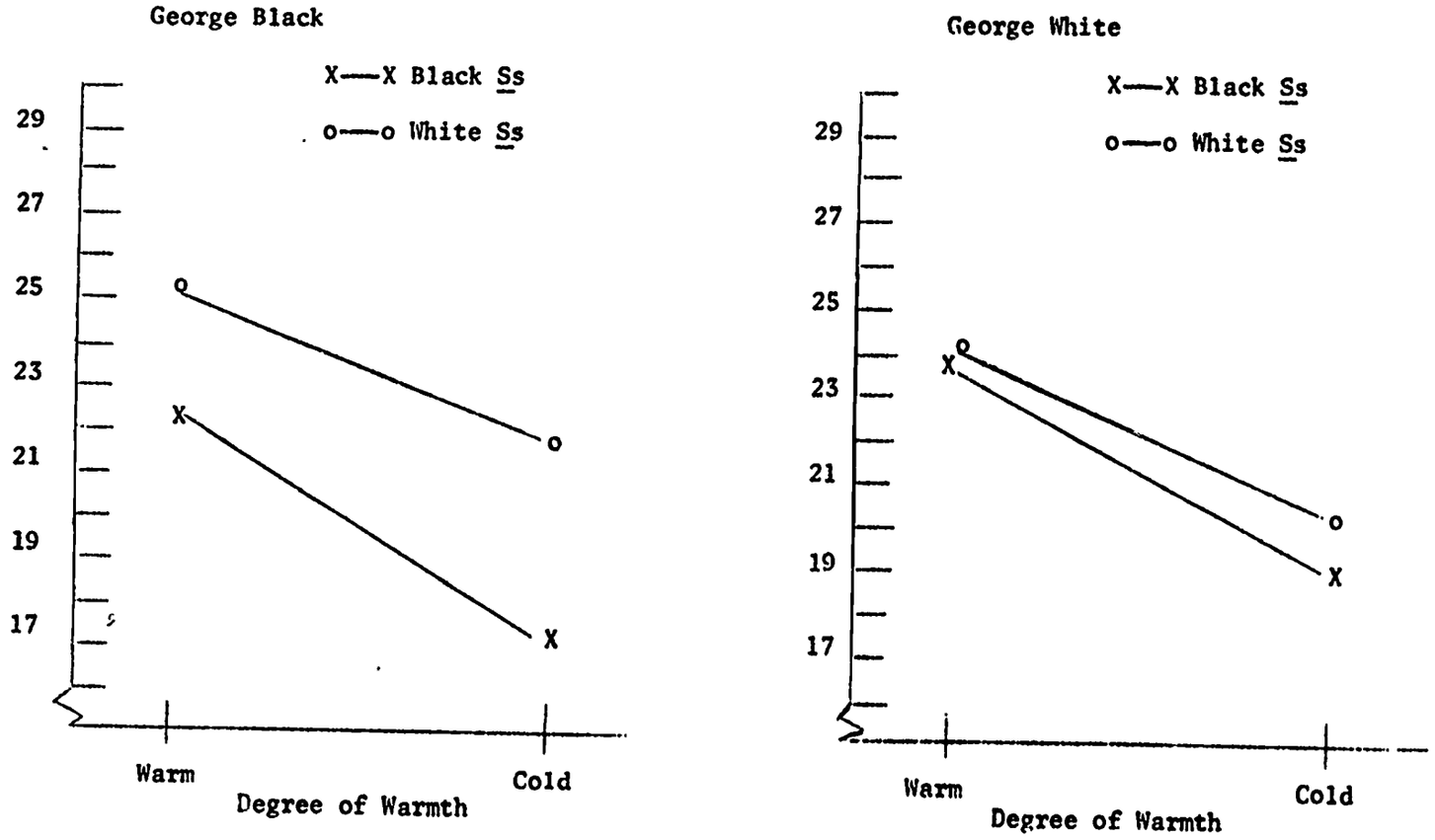


Figure 8. Graphic representation of the effect of race of subject x race of George x degree of warmth or evaluative dynamism of Jack by George. Levels of degree of warmth are graphed separately.

depending on George's race. Specifically, black subjects were much more sensitive to the degree of warmth in Jack's reply than were the white subjects; especially when George was black (see Figure 8). This was confirmed by a significant race of subject x degree of warmth interaction at the George black level of race of George ($F = 8.28$, $p < .01$). The pattern of the means for race of subject x degree of warmth at the George white level was similar, but not significant (see Figure 8). This was direct confirmation of the black subjects greater sensitivity to the degree of warmth (Trend 1). It was also the pattern of means for this interaction that accounted for the significant race of subject x race of George interaction reported in Table 3. The pattern of means can be derived from Figure 8. This was further confirmation of the subjects' tendency to attribute more positively when George was of a different race that the subject (Trend 2). Finally, it was the subject's attributions when George was black that was primarily responsible for the main effect for race of subject reported in Table 3 (see also Figure 8). This was specifically confirmed by simple, simple main effects for race of subject at the George black-warm and George black-cold levels of race of George x degree of warmth only ($F = 4.04$, $p < .05$ and $F = 16.90$, $p < .01$, respectively).

Again it was clear from the above analyses that a main effects model was insufficient to account for the data. It was also clear that neither the main effects nor the interactions by themselves could account for the asymmetry between this and the previous dependent variable. We shall defer further comment until the discussion section.

Intimate friendship between Jack and George. The results of the analysis of variance for this dependent variable are presented in Table 5 and the cell means are presented in Table 6. As suggested by the title, this dependent variable was symmetrical. In contrast to the first two dependent variables, the subjects attributed reciprocity in the relationship between Jack and George in terms of friendship and intimacy. Furthermore, the relationship was generally perceived as distant. The grand mean was 13.01 compared to the scale midpoint of 18.0. Again, only warm, autonomous responses by Jack caused responses by subjects to exceed the midpoint of the scale.

The analysis of variance summarized in Table 5 again indicated that the main effects for degree of warmth and degree of autonomy controlled a major proportion of the systematic variance for this dependent variable. However, since several higher order interactions containing one or both of these variables were significant these interactions will be analyzed first. Two significant third-order interactions occurred in the design (see Table 5). The first was a role played by Jack x race of George x degree of warmth x degree of freedom interaction. The pattern of the means for this interaction is presented in Figure 9. Analysis of the simple effects and application of a main effects model to the pattern of the means indicated the interaction was primarily due to the differential attributions of intimate friendship by the subjects when Jack and George were coworkers and George was black or when Jack was a foreman and George was white. This was confirmed by significant simple, simple degree of warmth x degree of autonomy interactions at the worker-George black and foreman-George white levels of role played by Jack x race of George ($F = 10.56$, $p < .01$ and $F = 5.28$, $p < .05$, respectively). In the other two levels (foreman-George black and worker-George white), a main effects model containing degree of warmth and degree of autonomy was

Table 5

Analysis of Variance Summary Table for

Intimate Friendship between Jack and George

Variance$_2$Accounted for by ω^2/R^2	Source of Variation	df	Mean Square	F Ratio
	Between Groups			
	Race of Subject (A)	1	304.554	2.624
.012/.044	Role Played by Jack (B)	1	755.578	6.511*
	Race of George (C)	1	136.338	1.175
	Sex of Experimenter (D)	1	282.196	2.432
.009/.034	A X C	1	565.875	4.876*
	S's Within Groups	140	116.055	
	Within Groups			
.104/.317	Degree of Warmth (E)	1	1327.053	65.049**
	E X Ss Within Groups	140	20.401	
.097/.300	Degree of Autonomy (F)	1	1084.095	59.965**
.009/.034	A X F	1	87.742	4.853*
.010/.040	B X C X D X F	1	104.767	5.795*
	F X Ss Within Groups	140	18.079	
.020/.077	E X F	1	198.193	11.651**
.008/.032	B X C X E X F	1	77.437	4.552*
	E X F X Ss Within Groups	140	17.011	

[a]Due to unequal cell frequencies the approximate method of unweighted means was used (Winer, 1962, pp. 222-224).

[b]Percent variance calculated only for significant effects. Two estimates are shown (see Footnote 1).

Table 6

Cell Means of Intimate Friendship between Jack and George

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman, Race of George: Black, Warm	Foreman, Black, Cold	Foreman, White, Warm	Foreman, White, Cold	Worker, Black, Warm	Worker, Black, Cold	Worker, White, Warm	Worker, White, Cold
Black	Male	Autonomous	12.54[a] 11[b]	9.27 11	18.50 8	13.62 8	13.63 11	8.81 11	13.62 8	11.75 8
		Controlling	9.18 11	8.55 11	13.50 8	9.25 8	9.18 11	8.54 11	13.88 8	9.25 8
	Female	Autonomous	14.00 10	9.50 10	15.20 10	12.80 10	15.58 12	10.42 12	17.89 9	14.56 9
		Controlling	10.80 10	9.70 10	11.00 10	12.20 10	12.75 12	11.17 12	16.78 9	16.00 9
White	Male	Autonomous	15.91 11	11.82 11	14.30 10	9.70 10	21.87 8	14.12 8	18.33 9	12.67 9
		Controlling	12.55 11	9.00 11	7.10 10	6.50 10	15.00 8	14.38 8	16.78 9	11.56 9
	Female	Autonomous	17.60 10	14.80 10	15.50 10	9.50 10	17.10 10	13.60 10	20.00 9	19.89 9
		Controlling	12.40 10	11.40 10	12.40 10	10.40 10	13.40 10	12.30 10	14.67 9	12.33 9

[a] Cell means

[b] Number of subjects per cell

sufficient to account for the data. The source of the simple, simple degree of warmth x degree of autonomy interactions were, in the case where Jack was a worker and George black, a cold and autonomous response by Jack and, in the case where Jack was a foreman and George was white, a warm and controlling response by Jack. In both instances more distant intimate friendship was attributed than would be expected by a main effects model. In fact, the attribution was so negative when Jack was a foreman and George white that subjects perceived the warm, controlling reply as more distant than a cold, controlling reply when Jack was a worker--an effect that did not occur in any other cells of the interaction (see Figure 9). This was the source of the simple role played by Jack x degree of warmth x degree of autonomy interaction at the George white level of C only ($F = 3.92$, $p < .05$). This again confirms the trend for less sensitivity to the degree of autonomy when Jack was a worker (Trend 4). Finally, it was also confirmed by two simple, simple degree of warmth x degree of autonomy interactions. It was this differential attribution when Jack was a worker that was responsible for the degree of warmth x degree of autonomy interaction reported in Table 5. The pattern of the means is similar to that reported for the previous dependent variables and may be derived from Figure 9. It is also clear, however, that the above discussion indicates the degree of warmth x degree of autonomy interaction was due to different sources than the previous dependent variables.

The second significant third-order interaction was a significant role of Jack x race of George x sex of experimenter x degree of freedom interaction. The pattern of the means is presented in Figure 10. Analysis of the simple main effects and interactions indicated that this interaction was due to differential responding by the subjects to the role played by Jack and to the sex of the experimenter only when George was white. When George

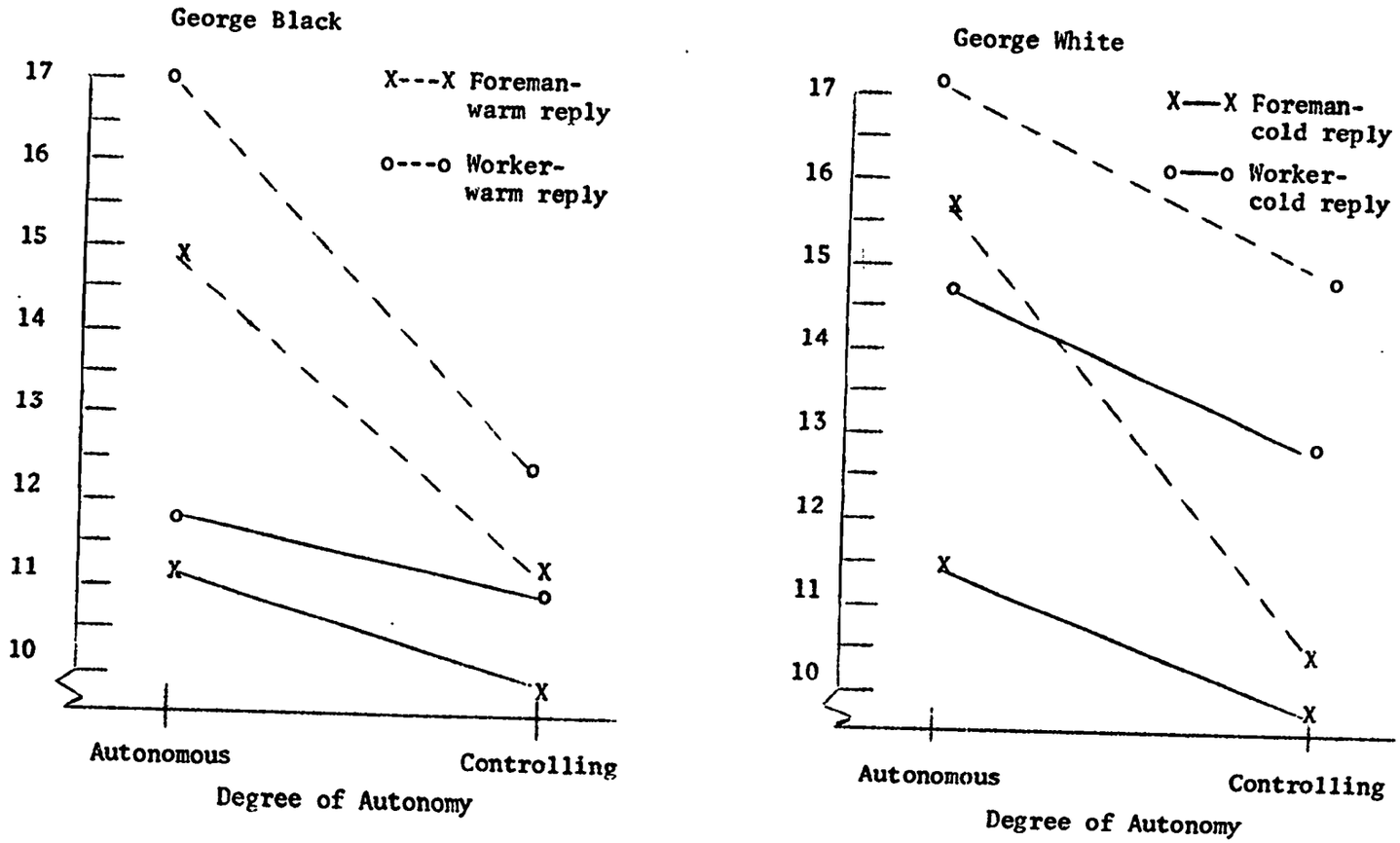


Figure 9. Graphic representation of the effect of role played by Jack x race of George x degree of warmth x degree of autonomy on intimate friendship between Jack and George. Levels of race of George are graphed separately.

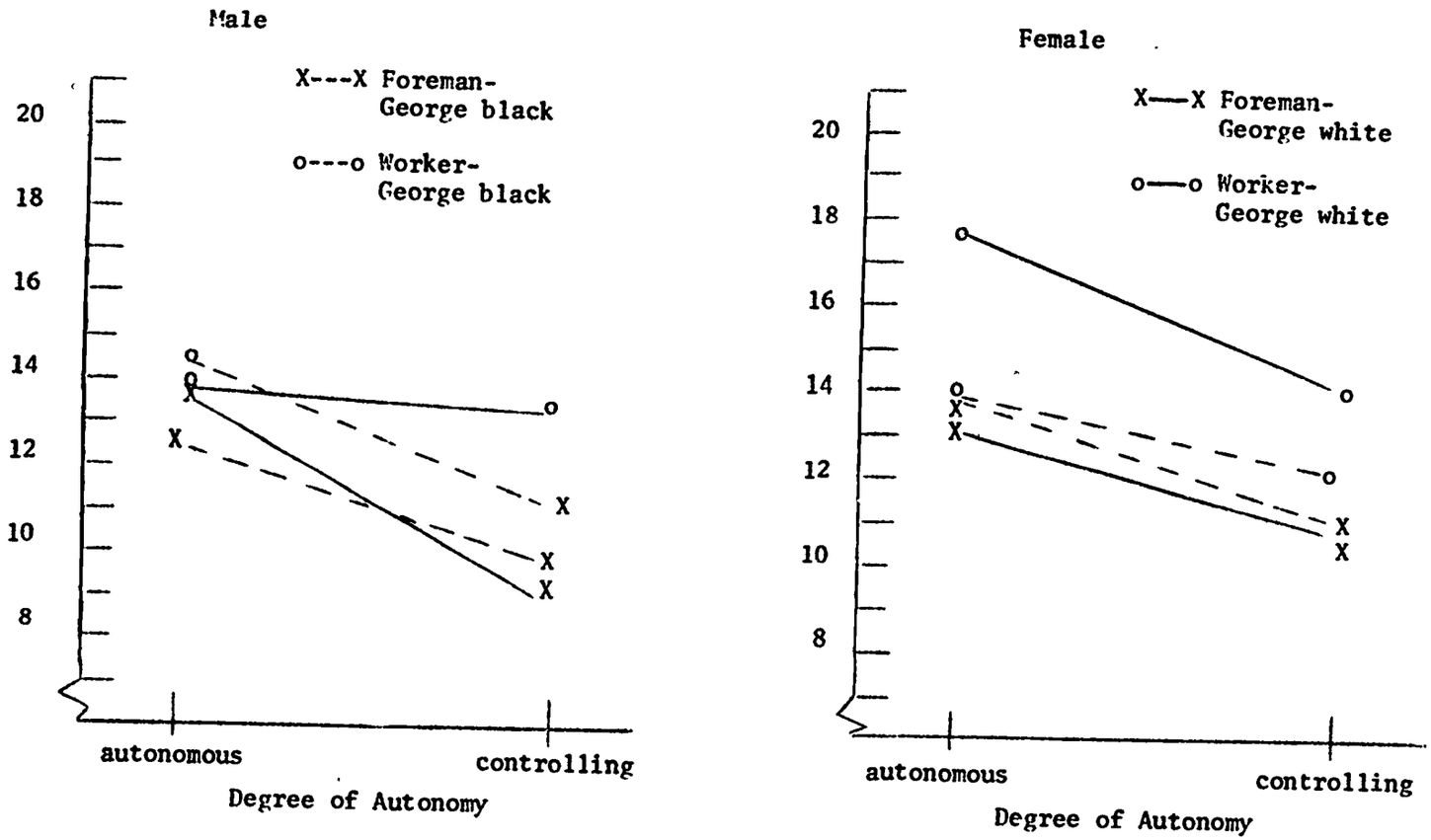


Figure 10. Graphic representation of the effect of role played by Jack x race of George x sex of experimenter x degree of autonomy on intimate friendship between Jack and George. Levels of sex of experimenter are graphed separately.

was black, only a simple main effect for degree of autonomy was evident ($F = 27.54$, $p < .01$). However, when George was white and Jack gave an autonomous response to George's query, the presence of a female experimenter and the fact that Jack and George were of equal status produced more positive attributions of intimate friendship than any other cell in the interaction. This interpretation was confirmed by a simple, simple, simple main effect for sex of experimenter in the Jack (worker)-George white-autonomous level of role played by Jack x race of George x degree of autonomy ($F = 4.56$, $p < .05$). In addition, when Jack gave a controlling response, the responses by the subjects were even more differentiated. In these cells, equal status always produced more positive attributions of intimate friendship by the subjects while the presence of a male experimenter tended to produce more negative attributions than did a female experimenter. The exact pattern of the means for the above discussion can be obtained in Figure 10. The above interpretation is fully confirmed by a significant simple role played by Jack x sex of experimenter x degree of autonomy interaction and a simple main effect for role played by Jack at the George white level of race of George ($F = 6.96$, $p < .01$; and $F = 6.08$, $p < .05$, respectively). These analyses suggest that George white and equal status are more conducive to intimate friendship if the reply was controlling. It becomes more complex when the reply is autonomous (see Figure 10).

Finally, two first-order interactions were significant for this dependent variable (see Tables 5 and 6). The first of these was a race of subject x race of George interaction. Analysis of the simple effects confirmed that the interaction was due to the black subjects' negative attributions when George was black. They saw far less intimate friendship that did the white subjects ($\bar{X}_b = 10.80$ vs. $\bar{X}_\omega = 14.19$; $F = 6.36$, $p < .01$) when George was black.

Black subjects also perceived far less intimate friendship when George was black than when he was white ($\bar{X}_{gb}$ = 10.80 vs. $\bar{X}_{g\omega}$ = 13.21, F = 5.73, p < .05). However, black and white subjects attributions did not differ when George was white ($\bar{X}_{b}$ = 13.21 vs. $\bar{X}_{\omega}$ = 12.62, N.S.). Thus, the black subjects perceived the relationship between Jack and George as being very distant when George was black but did not differ from the white subjects' perception when George was white. The second first-order interaction in Table 5 was a significant race of subject x degree of autonomy interaction. The means indicate black subjects were less sensitive to the degree of autonomy in Jack's reply than were the white subjects which is direct confirmation of Trend 1 ($\bar{X}_{a}$ = 15.50 vs. $\bar{X}_{c}$ = 12.00, respectively for whites and $\bar{X}_{a}$ = 13.25 vs. $\bar{X}_{c}$ = 11.30, respectively for blacks). In addition, the black subjects saw significantly less intimate friendship in the autonomous condition than the white subjects did. The above was confirmed by significant simple main effects for degree of autonomy in both levels of race of subject (F = 69.25, p < .01 and F = 34.62, p < .01, respectively), and a significant simple main effect for race of subject in the autonomous level of degree of autonomy only (F = 4.37, p < .05).

The three main effects shown in Table 5 have been discussed previously in connection with the higher order interactions in which they appear. As is clear from the earlier discussion, the role played by Jack, degree of warmth, and degree of autonomy main effects are in the same direction in all cells of the design (foreman < worker, warm > cold, and autonomous > controlling, respectively, but are moderated significantly by the other independent variables and each other. Thus a main effects model containing these main effects did not fit the data although in certain of the levels of other variables it achieved a close match.

Respect for Jack by George. The results of the analysis of variance for this variable are presented in Table 7 (as before only significant interactions are presented) and the means are presented in Table 8. The grand mean for this dependent variable was 10.05 which was greater than the scale midpoint of 9.0 (only two scales were summed to obtain this dependent variable). Thus the asymmetry mentioned earlier in reference to dependent variables 1 and 2 ("global" evaluative dynamism of George by Jack and evaluative dynamism of Jack by George) was further confirmed by this variable. Several hypotheses are possible, but will be discussed in the discussion section (see main text).

As was the case for all dependent variables in this experiment, the main effects for degree of warmth (E) and degree of freedom (F) controlled most of the systematic variance in the design; however, as before, they are embedded in several higher order interactions which must be analysed first. The most complex of these interactions was a significant race of subject x role of Jack x race of George x degree of warmth x degree of freedom interaction. The pattern of the means for this interaction is presented in Figure 11. Within this interaction all of the trends are supported; however, because of the complexity of this interaction and because the central interest of this study concerns Jack's reply to a request for help, the simple effects within each of the four replies given by Jack (warm-autonomous, warm-controlling, cold-autonomous, and cold-controlling) are presented first. The levels of degree of warmth x degree of autonomy (E x F) are then recombined and effects within the total interaction are discussed.

Within the warm-autonomous level of E x F, white subjects attributed greater respect for Jack by George than did black subjects regardless of the role played by Jack or the race of George. This was confirmed by a

Table 7

Analysis of Variance Summary Table for

Respect for Jack by George[a]

Variance Accounted for by ω^2 / R_1^2	Source of Variation	df	Mean Square	F Ratio
	Between Groups			
	Race of Subject (A)	1	44.319	1.342
	Role played by Jack (B)	1	.053	< 1
	Race of George (C)	1	2.423	< 1
	Sex of Experimenter (D)	1	6.270	< 1
.010/.041	A X C	1	196.950	5.964*
	Ss Within Groups	140	33.022	
	Within Groups			
.149/.412	Degree of Warmth (E)	1	874.076	98.005**
.008/.030	C X D X E	1	38.477	4.314*
.007/.027	A X C X D X E	1	34.726	3.894*
	E X Ss Within Groups	140	8.919	
.095/.295	Degree of Autonomy (F)	1	502.126	58.467**
.026/.096	A X F	1	127.089	14.798**
.008/.031	A X B X C X F	1	38.598	4.494*
.010/.037	B X C X D X F	1	46.597	5.426*
	F X Ss Within Groups	140	8.588	
.017/.064	A X B X C X E X F	1	95.757	9.583**
	E X F X Ss Within Groups	140	9.992	

[a]Due to unequal cell frequencies, the approximate method of unweighted means was used (Winer, 1962, pp. 222-224).

*p < .05
**p < .01

Table 8

Cell Means for Respect for Jack by George

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman — Race of George: Black — Warm	Foreman — Black — Cold	Foreman — White — Warm	Foreman — White — Cold	Worker — Black — Warm	Worker — Black — Cold	Worker — White — Warm	Worker — White — Cold
Black	Male	Autonomous	11.36[a] 11[b]	8.09 11	13.50 8	11.50 8	10.00 11	8.45 11	11.75 8	8.25 8
		Controlling	9.36 11	8.36 11	12.50 8	8.50 8	8.73 11	7.27 11	12.12 8	11.12 8
	Female	Autonomous	11.50 10	6.80 10	10.30 10	9.70 10	12.33 12	9.17 12	10.67 9	10.33 9
		Controlling	9.20 10	6.50 10	8.60 10	7.40 10	11.58 12	7.75 12	10.11 9	10.22 9
White	Male	Autonomous	13.18 11	10.82 11	14.00 10	10.60 10	13.25 8	9.62 8	12.78 9	7.44 9
		Controlling	11.00 11	7.36 11	9.90 10	7.40 10	9.25 8	9.38 8	9.56 9	8.44 9
	Female	Autonomous	14.50 10	13.20 10	13.30 10	6.90 10	12.30 10	9.50 10	13.44 9	13.00 9
		Controlling	13.10 10	8.60 10	8.40 10	6.90 10	9.20 10	8.90 10	10.00 9	6.00 9

[a] Cell Means

[b] Number of Subjects per Cell

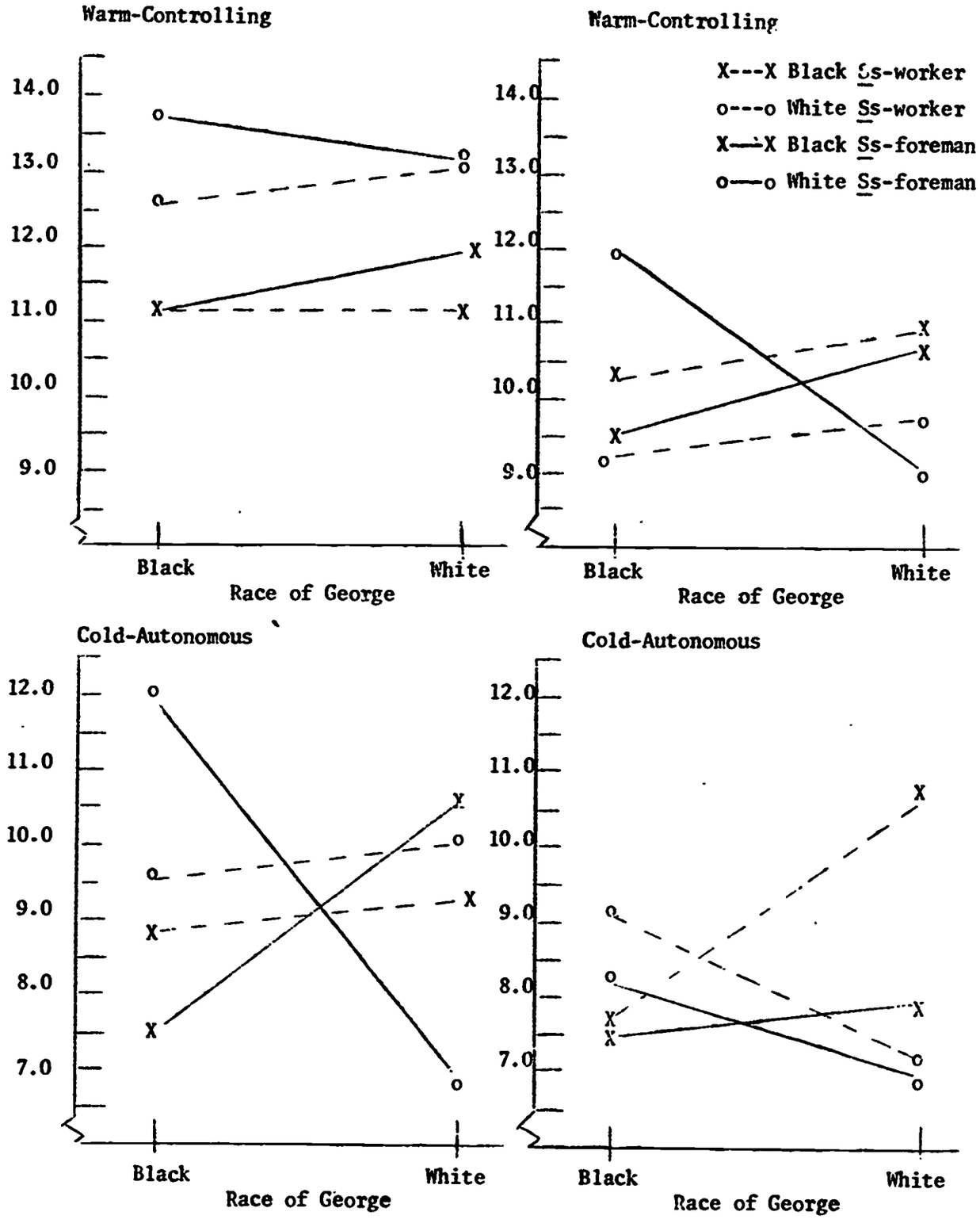


Figure 11. Graphic representation of the effect of race of subject x role played by Jack x race of George x degree of warmth x degree of autonomy on respect for Jack by George. Levels of degree of warmth x degree of autonomy are graphed separately.

simple, simple main effect for A at the warm-autonomous level of E X F ($F = 5.06$, $p < .05$). This effect was strongest, however, when Jack was a foreman and George was black and when Jack was a worker and George was white (see Figure 11).

Within the warm-controlling level of E X F the subjects attributions were somewhat more complex. Black subjects attributed only slightly greater respect for Jack by George when George was white than when he was black and only slightly greater respect when Jack was a worker. White subjects' attributions were similar to those of the blacks and only slightly more negative (all simple F-tests were nonsignificant). However, when Jack was a foreman, white subjects attributed a very large amount of respect for Jack by George when he was black and much less respect when George was white. In fact, this last mean was the lowest in the warm-controlling level of E X F (see Figure 11). This strong attribution by the white subjects was confirmed by a significant simple, simple race of subject x race of George interaction at the warm-controlling level of degree of warmth x degree of autonomy ($F = 5.50$, $p < .05$) and a simple, simple, simple race of subject x race of George interaction at the foreman-warm-controlling level of role played by Jack x degree of warmth x degree of autonomy only ($F = 9.12$, $p < .01$). The effect when Jack was a foreman was strong confirmation of Trend 2 where "same race" stimuli are seen as receiving more negative attributions.

The cold, autonomous level of degree of warmth x degree of autonomy was similar to the warm-controlling level described above. The basic differences were a nonsignificant reversal of the black and white subjects attributions when Jack was a worker and much greater differentiation of their attributions when Jack was a foreman. More specifically, white subjects attributed slightly greater respect for Jack by George when Jack was a worker than black

subjects did. When Jack was a foreman, however, both black and white subjects attributed a great deal of respect for Jack by George when he was of a different race than the subject. Though the white subjects attribution was more extreme, both were greater than any of the means when Jack was a worker. On the other hand, when Jack was a foreman and George was of the same race as the subjects, both black and white subjects attributed the least amount of respect for Jack by George as suggested by Trend 2 (see Figure 11). This interpretation was confirmed by a significant simple, simple race of subject x race of George interaction at the cold-autonomous level of degree of warmth x degree of autonomy ($F = 10.10$, $p < .01$) and a significant simple, simple, simple race of subject x race of George interaction at the foreman-cold-autonomous level of role played by Jack x degree of warmth x degree of autonomy only ($F = 21.58$, $p < .01$). The greater extremity of the attributions in the cold-autonomous than in the warm-controlling levels of degree of warmth x degree of autonomy was confirmed by significant simple, simple, simple race of subject x role played by Jack interactions at the George black-cold-autonomous and George white-cold-autonomous levels of race of George x degree of warmth x degree of autonomy ($F = 7.69$, $p < .01$, and $F = 5.93$, $p < .05$).

Within the cold-controlling level of degree of warmth x degree of autonomy, the subject's attribution are even more complex. For the first time, the subjects' attributions when Jack was a worker were similar to their attributions when Jack was a foreman and his reply was warm and controlling or cold and autonomous. However, the most positive attribution of respect for Jack by George occurred when George was white and the subjects were black. When Jack was a foreman, the direction of the means was identical and the overall attributions were slightly more negative, but the differences in the means were very small (see Figure 11). This interpretation was confirmed

by a significant simple, simple race of subject x race of George interaction at the cold-controlling level of degree of warmth x degree of autonomy ($F = 10.86$, $p < .01$) and a significant simple, simple, simple race of subject x race of George interaction at the worker-cold-controlling level of role played by Jack x degree of warmth x degree of autonomy ($F = 13.56$, $p < .01$) while it only approached significance at the foreman-cold-controlling level ($F = 3.03$, $p < .10$).

When the four levels of degree of warmth x degree of autonomy were compared jointly, an overall interpretation of the A X B X C X E X F interaction is possible. First of all, a generally cold response by Jack clearly produced more complex attributions than a generally warm reply did. This was confirmed by a simple A X B X C X F at the cold level of E only ($F = 13.56$, $p < .01$), while the most complex (and the only) interaction at the warm level of E was a significant A X F interaction ($F = 8.28$, $p < .01$) which confirmed Trend 1 concerning cultural differences. The source of the simple A X B X C X F interaction is less clear even from Figure 11. The most obvious source is the shift in the attributions of the black and white subjects when Jack was a worker depending on whether Jack's reply was cold and autonomous or cold and controlling (see above analyses and Figure 11) confirming Trend 4. A secondary source was the lack of differential attributions by the black subjects based on the levels of autonomy when George was also black and Jack a foreman and the actual reversal of means in the levels of autonomy when George was black and Jack a worker (in all other cells an autonomous response by Jack was perceived as implying more respect than a controlling response) again confirming Trend 1. That the above reversal was not solely responsible for the interaction was confirmed by a significant simple, simple race of subject x race of George x degree of autonomy at <u>both</u> the foreman-cold

and worker-cold levels of role played by Jack x degree of warmth ($F = 6.52$, $p < .01$ and $F = 7.05$, $p < .01$, respectively) further confirming Trend 2. Trend 1 was also further confirmed by two simple, simple race of subject x degree of warmth interactions at the foreman-George black and worker-George white levels of role played by Jack x race of George ($F = 5.02$, $p < .01$ and $F = 6.27$, $p < .05$, respectively). Thus, it appears that when Jack's reply is anything other than warm and autonomous, it has very complex effects on the attributions of respect for Jack by George.

From the above analyses the source of the significant race of subject x role played by Jack x race of George x degree of autonomy interaction reported in Table 7 was the cold level of degree of warmth. Furthermore, since collapsing across E modified the means only slightly, the interpretations given for the cold, autonomous and cold, controlling replies by Jack were still valid and no further comment is necessary. The exact pattern of the means is easily derived from Figure 11. Finally, this fourth-order interaction was primarily the cause of both the race of subject x race of George and race of subject x degree of autonomy interactions reported in Table 7 (see Trends 2 and 1, respectively). Figure 11 indicated that the race of subject x race of George interaction occurred primarily when Jack was a foreman regardless of his reply though the above analyses confirm its existence only in the warm-controlling and cold-autonomous levels of E X F. The only time a race of subject x race of George interaction occurred when Jack was a worker was when his reply was cold and controlling--otherwise, a main effects model was more appropriate. The race of subject x degree of autonomy interaction occurred whether Jack's reply was also generally warm or generally cold. Furthermore, it was stable across all the cells of A X B X C X E X F although

in some it was nonsignificant. The general pattern of the means was outlined in the first part of Trend 1 (i.e., whites gave more polarized attributions of respect for Jack by George based on the degree of autonomy in Jack's reply than black subjects did).

Two other third-order interactions were significant for this dependent variable (see Table 7). The first was a significant race of subject x race of George x sex of experimenter x degree of warmth interaction. The pattern of the means is presented in Figure 12. Analysis of the simple effects indicated that the interaction was caused by the differential attributions of the subjects to the degree of warmth in Jack's reply depending on the race of George and the sex of the experimenter. Specifically, black subjects tended to be more sensitive to the degree of warmth in Jack's reply than white subjects (Trend 1), but only in the presence of a female experimenter when George was black. This was confirmed by a significant simple, simple race of subject x degree of warmth interaction at the George black-female experimenter level of race of subject x sex of experimenter only ($F = 6.78$, $p < .01$). Black subjects were also more likely to make complex attributions in general. This was confirmed by a significant simple main effect for degree of warmth and a significant simple race of George x sex of experimenter x degree of warmth interaction at the black subjects level of race of subject ($F = 40.87$, $p < .01$ and $F = 8.51$, $p < .01$, respectively) and only a significant main effect for degree of warmth at the white subjects level ($F = 61.94$, $p < .01$). Specifically, when Jack's reply was warm, the black subjects attributed far more respect for Jack by George when George was white than they did when he was black when the experiment was conducted by a male; however, when the experimenter was a female, the black subjects reversed their attributions and perceived more respect for Jack when George was black than

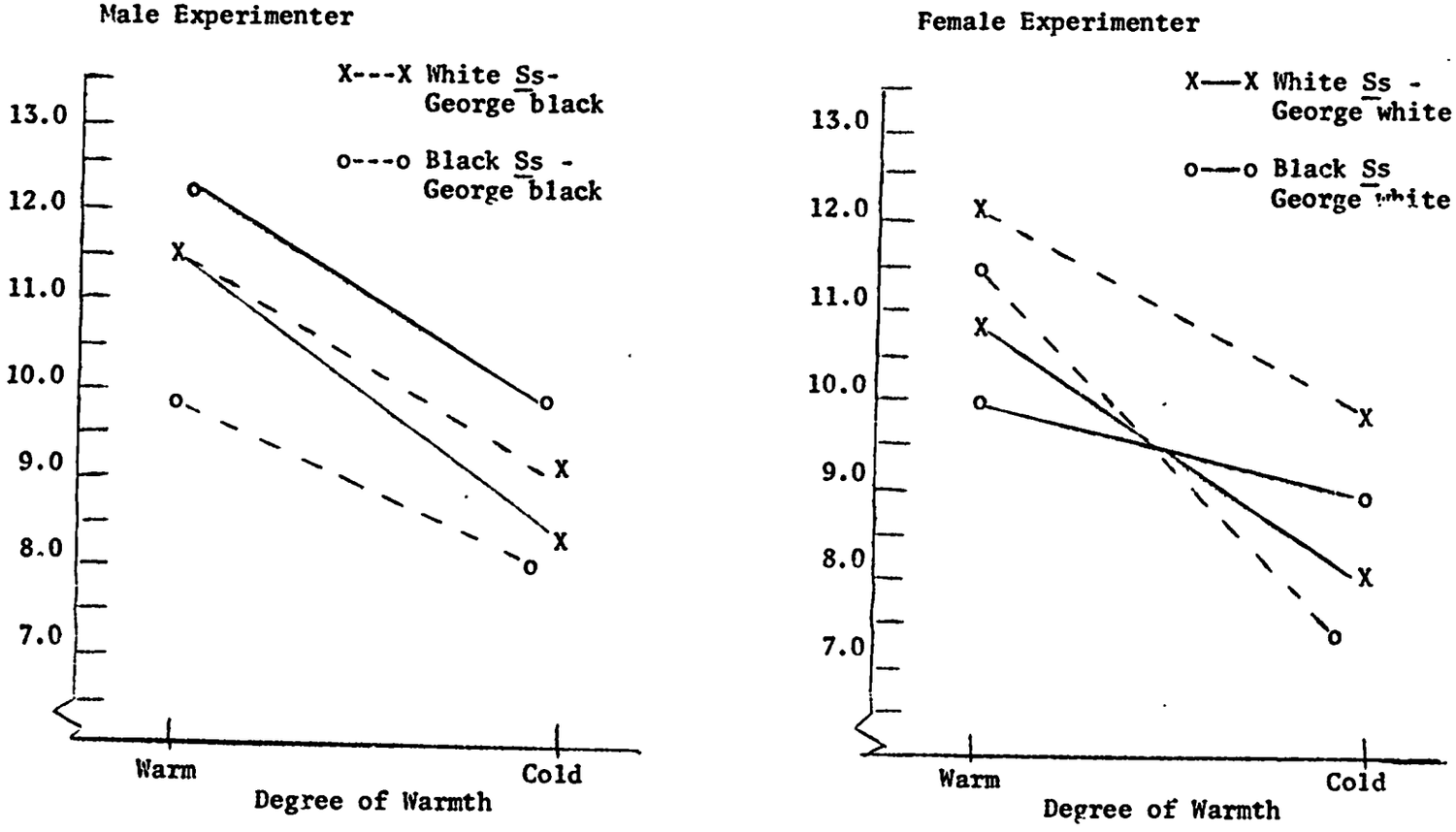


Figure 12. Graphic representation of the effect of race of subject x race of George x sex of experimenter x degree of warmth on respect for Jack by George. Levels of sex of experimenter are graphed separately.

they did when George was white. In contrast, when Jack's reply was cold, the black subjects attributed more respect for Jack by George when he was white than when he was black regardless of the sex of the experimenter. For all analyses at the white subjects level of race of subject, only simple main effects for E were significant. Finally, it is clear from the above analysis and the pattern of means in Figure 12 that the C X D X E interaction reported in Table 7 was primarily caused by the differential responding of the black subjects reported above. The exact pattern of the means may be derived from Figure 12.

The final third-order interaction reported in Table 7 is a significant role of Jack x race of George x sex of experimenter x degree of warmth interaction. The means for this interaction are presented in Figure 13. Analysis of the simple effects indicated that the interaction was caused by the subject's responding in a more differentiated pattern to the role played by Jack, the sex of the experimenter, and the degree of freedom in Jack's reply when George was white. When George was black, the attributions were far more uniform with differentiation occurring only with respect to the degree of freedom in Jack's reply. This was confirmed by a significant simple main effect for degree of autonomy at the George black level of race of George ($F = 28.35$, $p < .01$) and both a significant simple main effect for degree of autonomy and a significant simple role played by Jack x sex of experimenter x degree of autonomy interaction at the George white level ($F = 30.06$, $p < .01$ and $F = 7.61$, $p < .01$, respectively). More specifically, when George was white and Jack's reply to George's request was autonomous, subjects attributed greater respect for Jack by George when Jack was a foreman and the experimenter was male or when Jack was a worker and the experimenter was male. They attributed less respect when Jack was a foreman and the experimenter was female or Jack was a worker and the experimenter male.

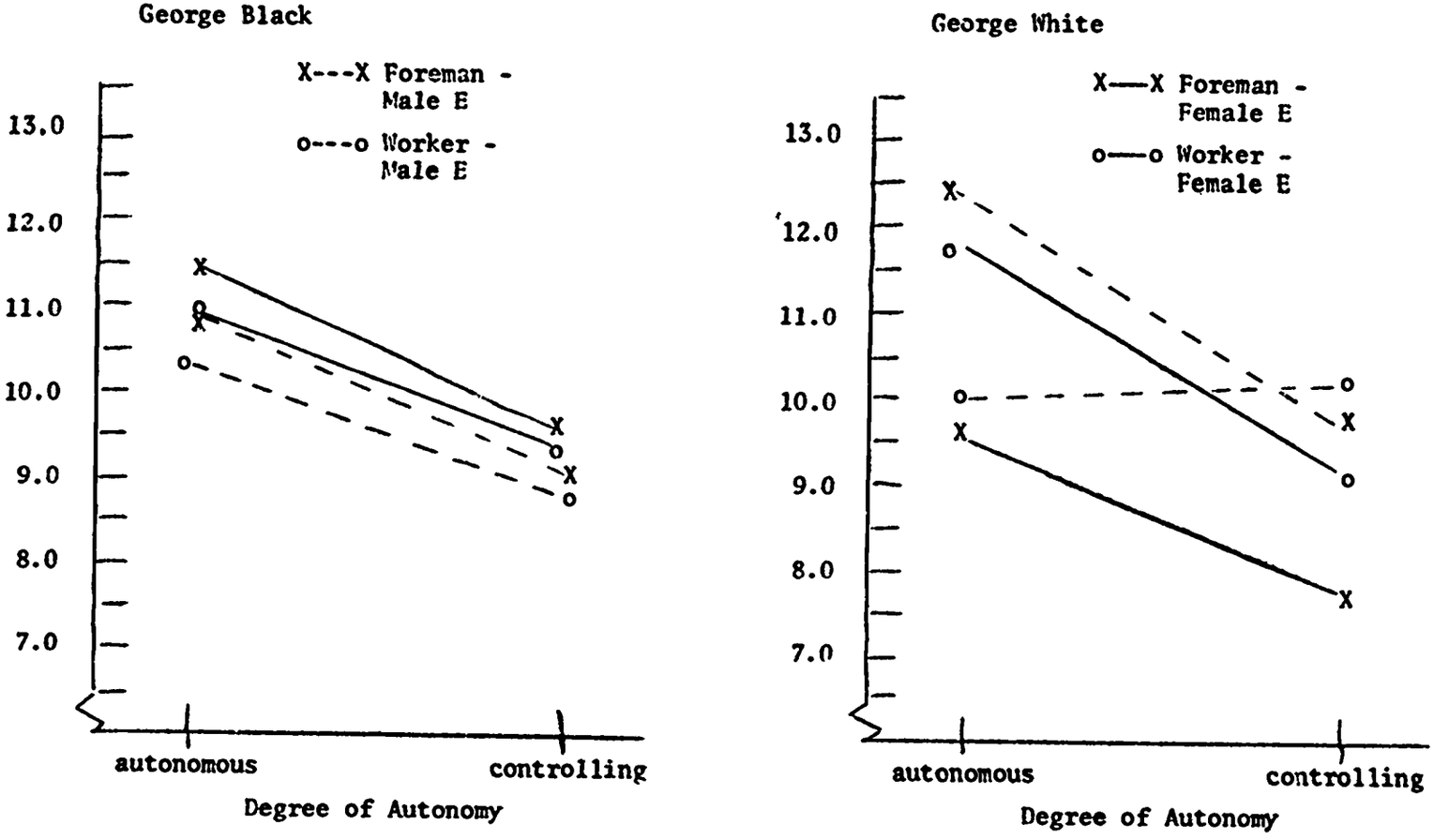


Figure 13. Graphic representation of the effect of role played by Jack x race of George x sex of experimenter x degree of autonomy on respect for Jack by George. Levels of race of George are graphed separately.

Hostility of George toward Jack. The results of the analysis of variance for this dependent variable are presented in Table 9 (all main effects and all significant interactions are shown) and the means for each cell are presented in Table 10. The grand mean for this dependent variable was 6.61 which compared with a scale midpoint of 9.0 (again only two variables were summed). This implies that the perception of hostility of George toward Jack was, in general, quite low. This was clearly indicated by the cell means in Table 10. Only seven of the sixty-four cells show a mean greater than the scale midpoint. This fact should be kept in mind when interpreting the results to follow. As Table 9 indicates, three main effects were significant--race of George (C), degree of warmth (E), and degree of autonomy (F). However, all of these variables appear in significant interactions with the other independent variables and with each other, so they must be interpreted within these higher order interactions.

There are three significant third-order interactions. The first of these is a significant race of subject x race of George x degree of warmth x degree of autonomy interaction. The pattern of the means is presented in Figure 14. Analysis of the simple effects indicated that the interaction was due to more complex attributions when George was white, depending on the race of the subject and on Jack's reply to George's request for help. When George was black, a main effects model was appropriate. This was confirmed by a significant simple race of subject x degree of warmth x degree of autonomy interaction at the George white level of race of subject only ($F = 10.30$, $p < .01$). There were also significant simple main effects for degree of warmth and degree of autonomy at the George white level ($F = 22.49$, $p < .01$ and $F = 24.12$, $p < .01$, respectively) and the George black level ($F = 26.91$, $p < .01$ and $F = 16.83$, $p < .01$, respectively). More specifically, when George

Table 9

Analysis of Variance Summary Table for

Hostility toward Jack by George[a]

Variance Accounted for by ω^2/R^2	Source of Variation	df	Mean Square	F Ratio
	Between Groups			
	Race of Subject (A)	1	78.453	1.599
	Role Played by Jack (B)	1	2.819	< 1
.015/.056	Race of George (C)	1	404.648	8.251**
	Sex of Experimenter (D)	1	15.010	< 1
	Ss Within Groups	140	49.039	
	Within Groups			
.081/.260	Degree of Warmth (E)	1	452.053	49.272**
	E X Ss Within Groups	140	9.175	
.068/.225	Degree of Autonomy (F)	1	329.333	40.631**
.012/.047	A X F	1	55.830	6.88**
.014/.055	B X F	1	66.630	8.220**
.007/.028	A X B X C X F	1	32.547	4.016*
.011/.043	B X D X F	1	50.458	6.225*
.012/.047	B X C X D X F	1	55.850	6.891*
	F X Ss Within Groups	140	8.105	
.008/.031	A X E X F	1	39.760	4.538*
.008/.030	B X E X F	1	38.014	4.339*
.010/.040	A X C X E X F	1	50.836	5.803*
	E X F X Ss Within Groups	140	8.761	

[a]Due to unequal cell frequencies, the approximate method of unweighted means was used (Winer, 1962, 1962, pp. 222-224).

*p < .05
**p < .01

Table 10

Cell Means for Hostility Toward Jack by George

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman — Race of George: Black — Warm	Foreman — Black — Cold	Foreman — White — Warm	Foreman — White — Cold	Worker — Black — Warm	Worker — Black — Cold	Worker — White — Warm	Worker — White — Cold
Black	Male	Autonomous	6.27[a] 11[b]	6.27 11	5.12 8	4.00 8	7.09 11	9.00 11	3.88 8	6.37 8
		Controlling	6.81 11	8.45 11	6.00 8	10.25 8	8.27 11	8.36 11	3.00 8	5.32 8
	Female	Autonomous	7.50 10	9.30 10	6.00 10	5.60 10	5.75 12	8.91 12	6.22 9	7.22 9
		Controlling	8.10 10	9.80 10	5.80 10	8.20 10	7.50 12	9.16 12	6.44 9	7.00 9
White	Male	Autonomous	3.72 11	5.90 11	3.60 10	5.50 10	5.38 8	8.50 8	3.11 9	7.67 9
		Controlling	6.18 11	7.54 11	8.30 10	8.50 10	7.75 8	8.88 8	6.44 9	5.11 9
	Female	Autonomous	4.10 10	5.90 10	3.40 10	7.60 10	6.40 10	8.00 10	1.44 9	3.22 9
		Controlling	6.50 10	10.00 10	6.30 10	7.00 10	7.00 10	9.00 10	4.56 9	7.44 9

[a] Cell Means
[b] Number of Subjects per Cell

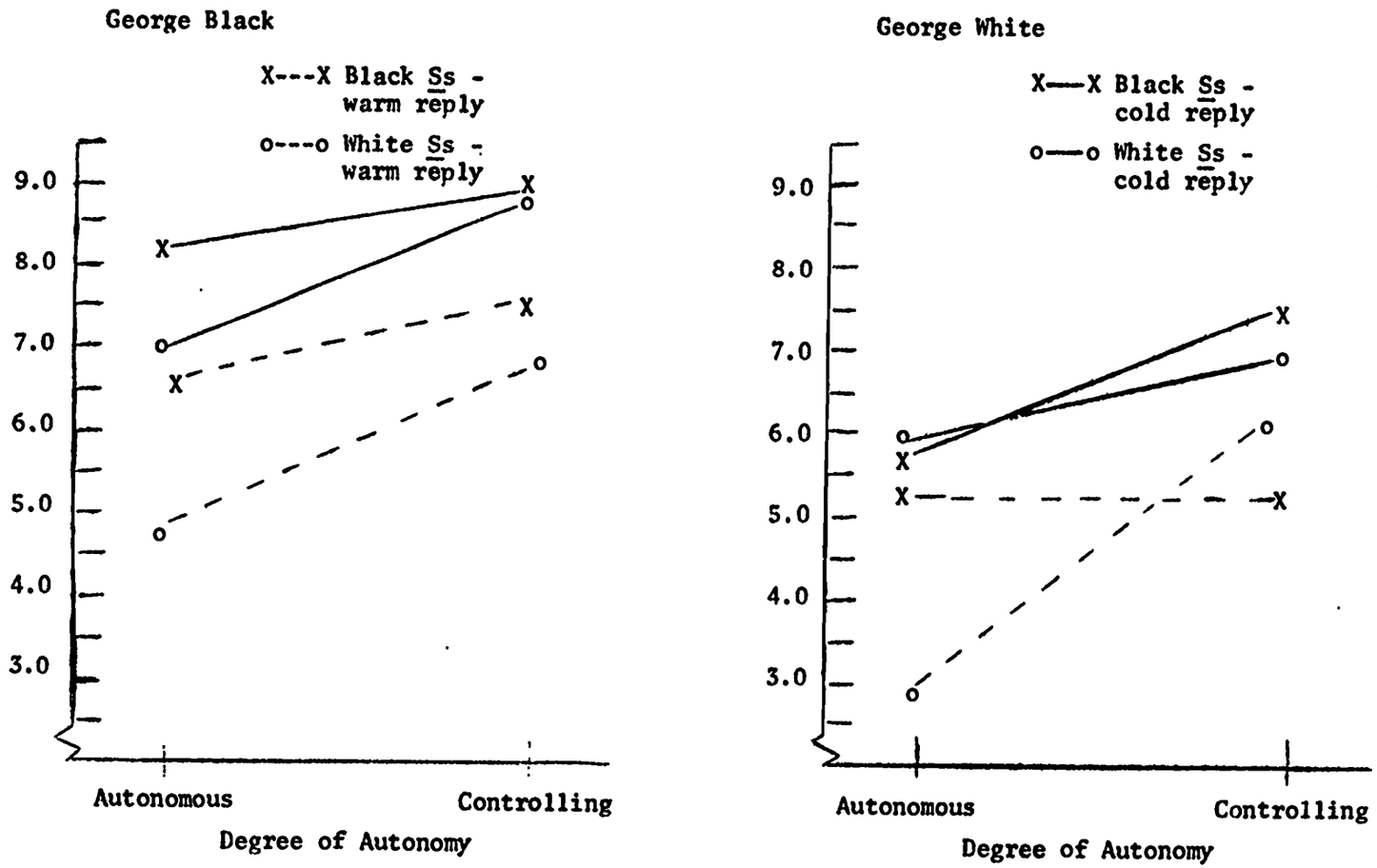
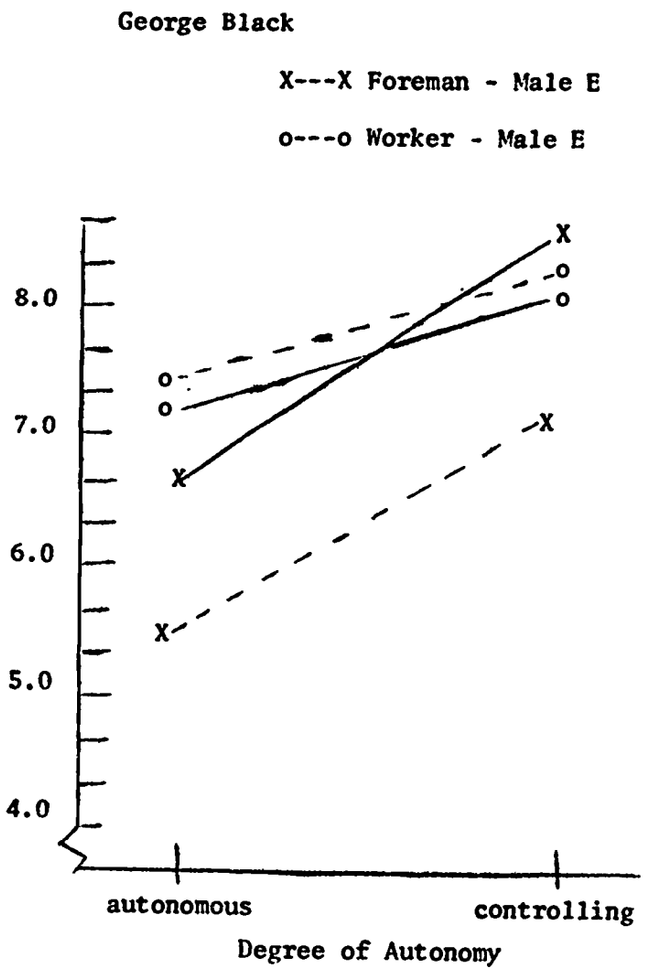


Figure 14. Graphic representation of the effect of race of subject x race of George x degree of warmth x degree of autonomy on hostility toward Jack by George. Levels of race of George are graphed separately.

was white, black subjects perceived no differences in hostility towards Jack by George when Jack gave a warm, autonomous or warm, controlling reply to George's request for help whereas the white subjects were much more sensitive to the two replies as suggested in Trend 1 (see Figure 14). This was confirmed by a significant simple, simple race of subject x degree of autonomy interaction at the George white-warm level of race of George x degree of warmth ($F = 14.00$, $p < .01$). Furthermore, when George was white, white subjects attributed less difference between a warm, controlling and cold, controlling reply while black subjects were very sensitive to the degree of warmth in the two replies, again confirming Trend 1. This was confirmed by a significant stimple, simple race of subject x degree of warmth interaction at the George white-controlling cell of race of George x degree of autonomy ($F = 5.73$, $p < .05$). In all other cells of the interaction, significantly greater hostility toward Jack by George was attributed when Jack's reply was cold rather than warm and controlling rather than autonomous and when George was black rather than white. Black subjects also tended to attribute greater hostility than did white subjects, but this was not significant. It was clear from Figure 14 and the analysis reported above, that the simple, simple race of subject x degree of autonomy and race of subject x degree of warmth interactions at the George white level of race of George were the primary sources of the race of subject x degree of warmth x degree of autonomy interaction reported in Table 9. This was also confirmed by a simple race of subject x degree of autonomy interaction within the three-way interaction at the warm level of degree of warmth only ($F = 11.25$, $p < .01$) and a near significant simple race of subject x degree of warmth interaction at the controlling level of degree of autonomy only ($F = 3.76$, $p < .06$). The exact pattern of the race of subject x degree of warmth x degree of autonomy

interaction is easily derived from Figure 14. Finally, the race of subject x degree of autonomy interaction reported in Table 9 was also traced to the simple, simple race of subject x degree of autonomy interaction at George white-warm level of race of George x degree of warmth. The effect of the other levels of C X E was to bring the subjects means slightly closer to the George white means. The exact pattern is also derivable from Figure 14.

The second significant third-order interaction in Table 9 was a role of Jack x race of George x sex of experimenter x degree of autonomy interaction. The pattern of the means for this interaction is shown graphically in Figure 15. Analysis of the simple effects indicated that this interaction was again due to more differentiated responding by the subjects when George was white. This was confirmed by a simple role played by Jack x sex of experimenter x degree of autonomy interaction at the George white level of race of George only ($F = 13.11$, $p < .01$). Again, this effect was confined to one level within the George white cells. In this case, the more complex attributions occurred only when George was white and a male experimenter was present, while a main effects model was sufficient to account for the pattern in the other cells. Specifically, when George was white and the experimenter was male, subjects attributed slightly greater hostility toward Jack as a worker when his reply was autonomous rather than controlling. Similar attributions by the subjects occurred when Jack was a foreman and his reply was autonomous, but when his reply was controlling the subjects perceived a very great degree of hostility toward Jack by George. When a female experimenter was present, however, subjects attributed significantly greater hostility when Jack gave a controlling response than when he gave an autonomous response regardless of his role. Subjects also tended to attribute greater hostility toward Jack in his role as a foreman regardless of his reply to George, but this trend was not significant.



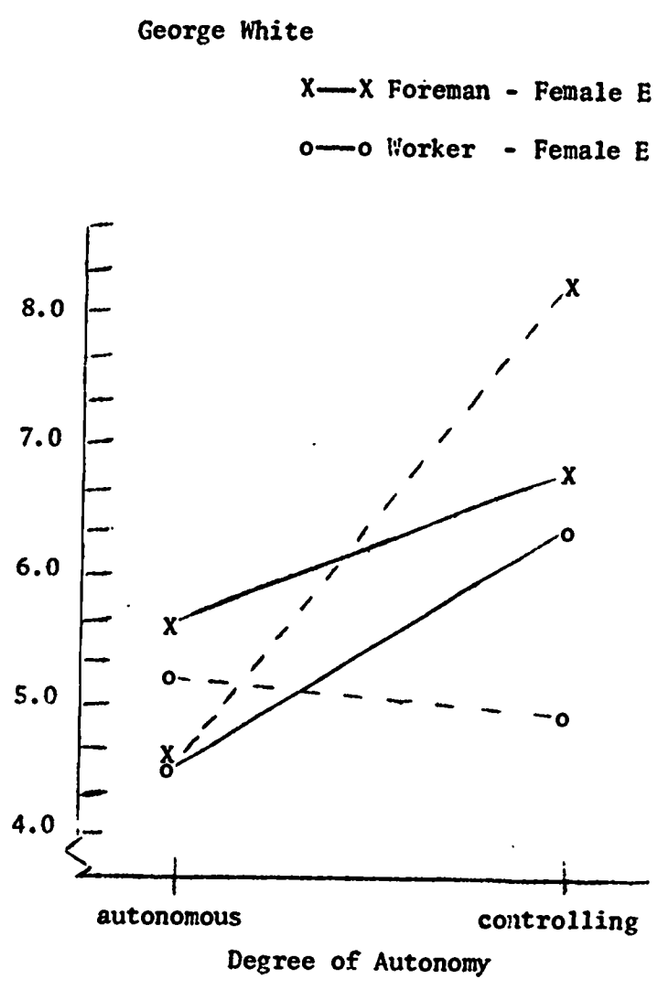


Figure 15. Graphic representation of the effect of role played by Jack x race of George x sex of experimenter x degree of freedom on hostility toward Jack by George. Levels of race of George are graphed separately.

When George was black and a male experimenter was present, the pattern of attributions was somewhat similar to that just described for the George white-female experimenter cells of the interaction. That is, the effect of degree of autonomy was identical but the subject's attributions were reversed with respect to Jack's role (greater hostility was attributed when Jack was a worker). When a female experimenter was present and George was black, again a controlling response by Jack produced attributions of greater hostility towards Jack by George and this interacted only slightly with Jack's role (see Figure 15). Finally, as Figure 15 clearly indicates, subjects attributed greater hostility toward Jack when George was black except in the case already cited where Jack was a foreman and the experimenter was male and George was white. The above analysis was confirmed by a significant simple, simple role played by Jack x degree of autonomy interaction at the George white-male experimenter level of race of George x sex of experimenter only ($F = 19.41$, $p < .01$) and by significant simple, simple main effects for degree of autonomy at all other levels of C X D (all $F's > 10.00$, $p < .01$).

As in the previous interaction, the simple, simple role played by Jack x degree of autonomy interaction reported above was the primary source of the role played by Jack x sex of experimenter x degree of autonomy interaction reported in Table 9. Since a main effects model accounted for the attributions above when George was black, the simple role played by Jack x degree of autonomy interaction at the male experimenter level of sex of experimenter within the role played by Jack x sex of experimenter x degree of autonomy interaction was only slightly modified from the pattern described above and was highly significant ($F = 15.87$, $p < .01$). Again a main effects model containing degree of autonomy was sufficient to account for the attributions when a female experimenter was present. Finally the role played by Jack x

degree of autonomy interaction reported in Figure 15 was also primarily a function of the subjects attributions when George was white and the experimenter was male.

The final third-order interaction was a significant race of subject x role of Jack x race of George x degree of autonomy interaction. The pattern of the means is shown in Figure 16. Analysis of the simple effects indicated that the interaction was again due to more complex attributions of hostility toward Jack by George when he was white, whereas the attributions when George was black conformed to a main effects model containing degree of autonomy only. This was confirmed by a significant simple race of subject x role played by Jack x degree of autonomy interaction at the George white level of race of George only ($F = 3.93$, $p < .05$) and by significant simple race of subject x degree of autonomy and role played by Jack x degree of autonomy interactions at the George white level only ($F = 4.25$, $p < .05$ and $F = 6.79$, $p < .01$, respectively). These higher order simple interactions within the "George white" cells of the third-order interaction were primarily due to the black subjects' attributions of hostility toward Jack when he was a worker. This was the only case within the interaction where an autonomous reply by Jack produced attributions of greater hostility toward Jack than did a controlling reply, but still confirms the expectations from Trend 1.

When this response pattern was combined with the response pattern of the white subjects, a significant simple, simple race of subject x degree of autonomy (A X F) interaction resulted at the worker-George white level of role played by Jack x race of George only ($F = 7.77$, $p < .01$) that was remarkably similar to the simple, simple A X F interaction reported earlier in the analysis of the race of subject x race of George x degree of warmth x degree of autonomy interaction (see Figure 16; also Figure 14). Furthermore,

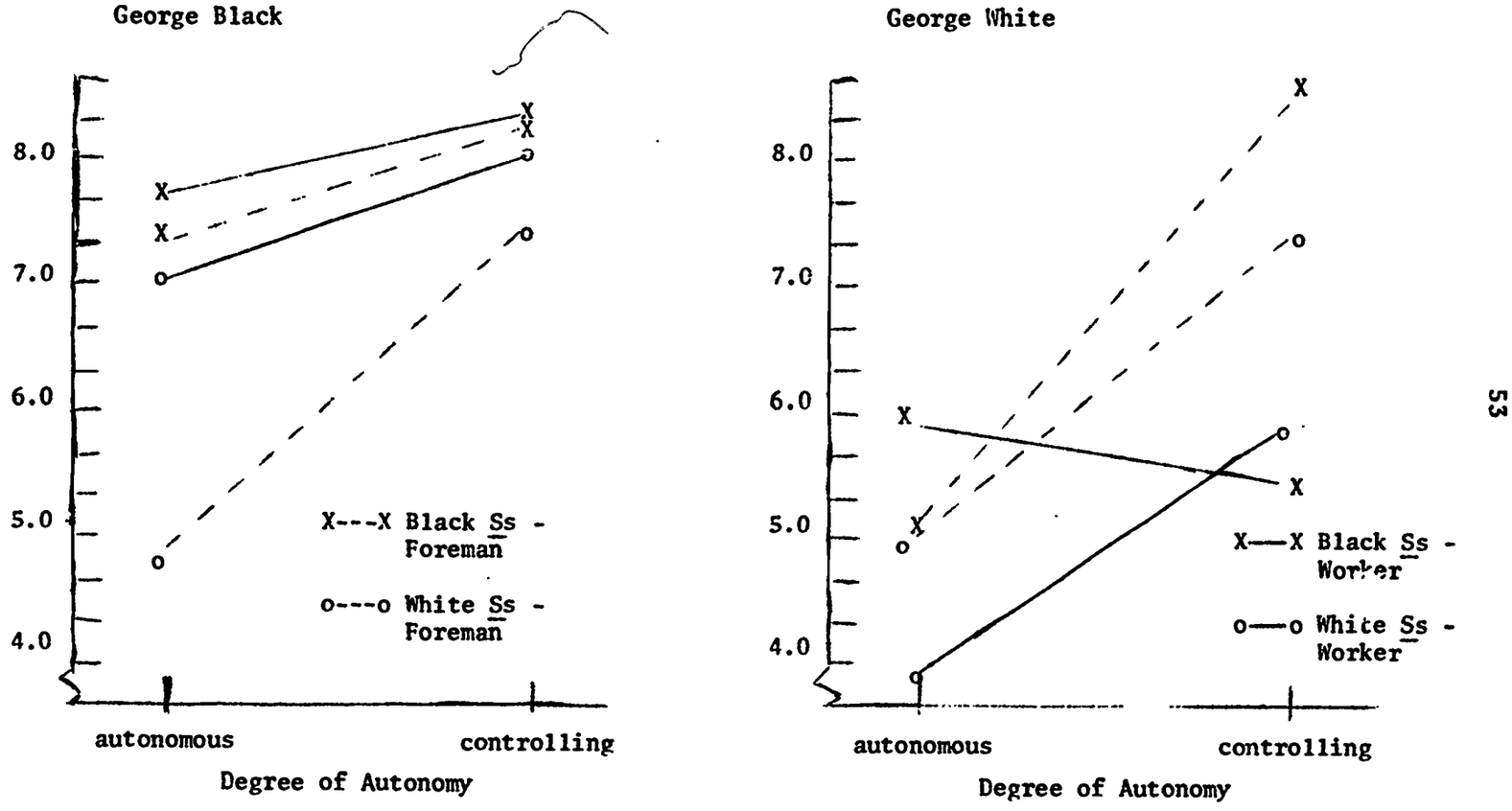


Figure 16. Graphic representation of the effect of race of subject x role played by Jack x race of George x degree of autonomy on hostility toward Jack by George. Levels of race of George are graphed separately.

when this pattern of attributions by black subjects when George was white and Jack was a worker was combined with their attributions when Jack was a foreman, a significant simple, simple role played by Jack x degree of autonomy interaction resulted at the black subjects-George white level of race of subject x race of George only ($F = 10.06$, $p < .01$) that were nearly identical to the pattern of means for the simple, simple role played by Jack x degree of autonomy interaction reported earlier in the analysis of the role played by Jack x race of George x sex of experimenter x degree of autonomy interaction (see Figure 16; also Figure 15). This similarity suggests that all the higher order interactions discussed above were due to the same set of cell means in the design. Furthermore, the pattern of the simple, simple race of subject x degree of autonomy and role played by Jack x degree of autonomy interactions suggest that the attributions of equal or greater hostility toward Jack when he gave a controlling response compared to when he gave an autonomous response occurred only when (1) George was white, (2) the subjects were black, (3) Jack was a worker, and (4) possibly when Jack was a foreman and his reply was also warm. This expectation was largely confirmed by the cell means in Table 10. White subjects had only two pairs of cell means that conformed to the above pattern--when George was white and Jack's reply was cold, and Jack was a foreman with a female experimenter present or a worker with a male experimenter present. Black subjects had one other pair of cell means not included above that matched the discrepant pattern--when George was black, Jack was a worker, his reply was cold, and with a male experimenter present (see Table 10).

The above discussion clearly suggests that the remaining interaction reported in Table 9, a role played by Jack x degree of warmth x degree of autonomy interaction, was due to the same cells described above. The pattern

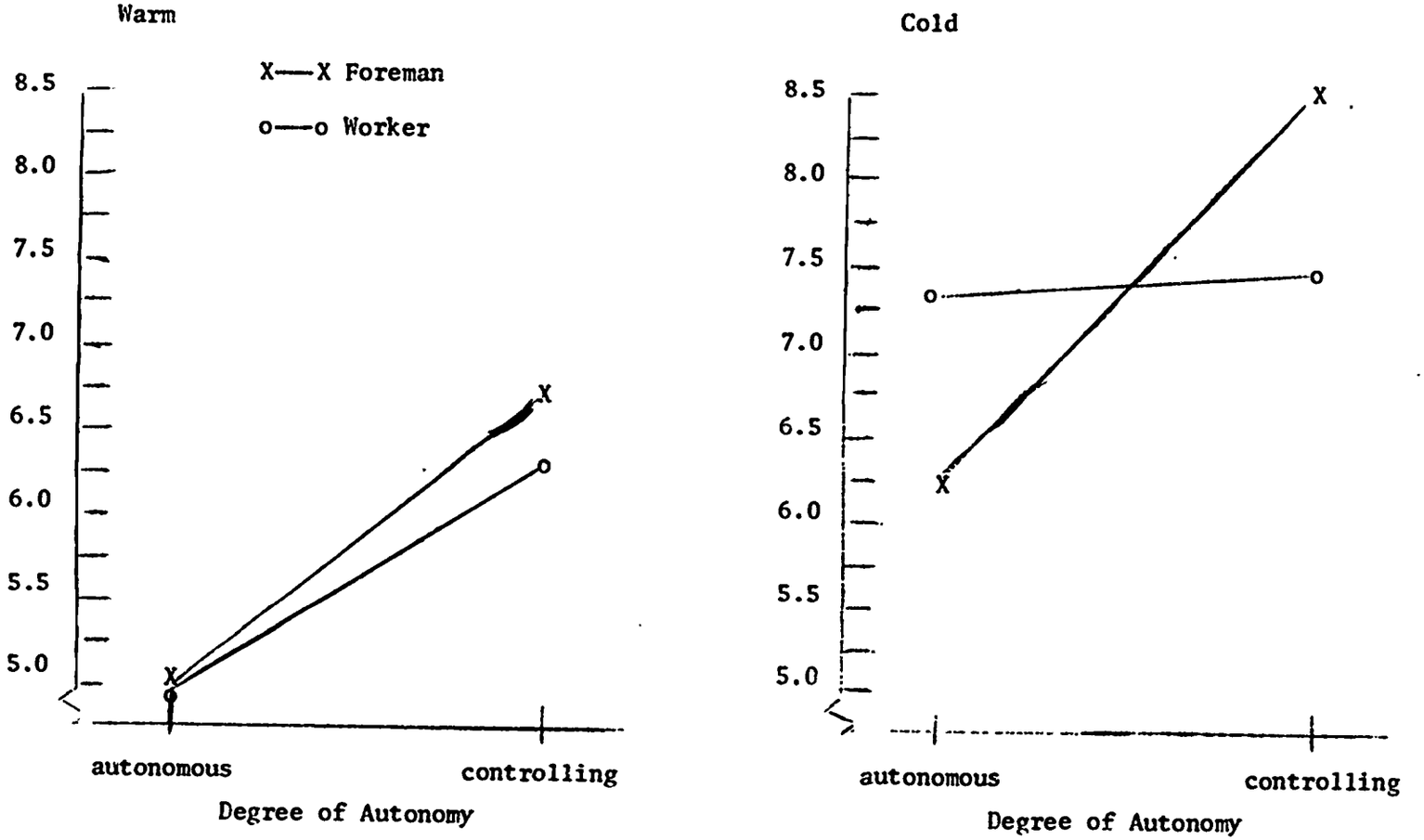


Figure 17. Graphic representation of the effect of role played by Jack x degree of warmth x degree of autonomy on hostility toward Jack by George. Levels of degree of warmth are graphed separately.

of the means for this interaction is presented graphically in Figure 17. Analysis of the simple effects confirmed the above hypothesis with a significant simple role played by Jack x degree of autonomy interaction at the cold level of degree of warmth only ($F = 12.66$, $p < .01$) that was similar to the simple, simple role played by Jack x degree of autonomy interactions reported for the earlier third-order interactions (see Figures 15, 16 and 17 for a precise comparison). The appearance of the simple role played by Jack x degree of autonomy interaction at the cold level of degree of warmth was consistent with the cell means reported above when Jack's reply was cold, but not predicted by the previous interactions.

The main effect for race of George conforms to Trend 3 with greater hostility attributed when George was black. This was consistent throughout the above interactions. Further support was suggested by the low level of complexity in the attributions when George was black (the source of all the higher order interactions was confined to the George-white cells). Finally, all the simple race of subject x degree of autonomy interactions reported above support the reported greater sensitivity of the white subjects to the degree of autonomy in Trend 1.

Hostility toward George by Jack. The results of the analysis of variance for this dependent variable are present in Table 11 (only significant interactions are shown), and the means for each cell are presented in Table 12. The grand mean for this dependent variable was 10.01 which compared with a scale midpoint of 9.0 and the grand mean for the previous dependent variable of 6.61. As was the case with dependent variables 1, 2, and 4 (global evaluative dynamism of George by Jack, evaluative dynamism of Jack by George and respect for Jack by George), reciprocity of hostility did not hold. Clearly, subjects perceived greater hostility

Table 11

Analysis of Variance Summary Table for

Hostility toward George by Jack[a]

Variance Accounted for by ω^2	Source of Variation	df	Mean Square	F Ratio
	Between Groups			
	Race of Subject (A)	1	15.946	< 1
	Role Played by Jack (B)	1	5.827	< 1
.060/.204	Race of George (C)	1	1531.121	35.960**
	Sex of Experimenter (D)	1	9.996	< 1
.018/.068	B X C	1	434.750	10.211**
.016/.060	A X B X C	1	382.585	8.986**
.008/.032	A X B X C X D	1	199.037	4.675*
	Ss Within Groups	140	42.578	
	Within Groups			
.107/.323	Degree of Warmth (E)	1	887.425	66.775**
	E X Ss Within Groups	140	13.290	
.161/.435	Degree of Autonomy (F)	1	1000.705	107.684**
	F X Ss Within Groups	140	9.293	
.010/.039	B X E X F	1	38.428	5.658*
.007/.027	A X C X E X F	1	26.885	3.958*
	E X F X Ss Within Groups	140	6.792	

[a]Due to unequal cell frequencies, the approximate method of unweighted means was used (Winer, 1962, pp. 222-224).

*p < .05
**p < .01

Table 12

Cell Means for Hostility toward Jack by George

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman — Race of George: Black — Warm	Foreman — Black — Cold	Foreman — White — Warm	Foreman — White — Cold	Worker — Black — Warm	Worker — Black — Cold	Worker — White — Warm	Worker — White — Cold
Black	Male	Autonomous	9.63[a] 11[b]	11.36 11	5.38 8	7.38 8	7.27 11	12.91 11	7.50 8	9.37 8
		Controlling	13.00 11	14.09 11	7.88 8	10.38 8	12.27 11	12.45 11	8.88 8	11.12 8
	Female	Autonomous	8.90 10	12.40 10	7.00 10	8.40 10	8.33 12	12.75 12	6.00 9	8.00 9
		Controlling	11.00 10	13.60 10	9.70 10	13.30 10	12.42 12	15.83 12	8.78 9	8.33 9
White	Male	Autonomous	6.72 11	9.00 11	7.70 10	10.60 10	9.75 8	16.00 8	5.55 9	8.78 9
		Controlling	8.81 11	11.55 11	12.00 10	13.10 10	13.75 8	16.12 8	6.22 9	8.00 9
	Female	Autonomous	8.00 10	8.40 10	6.90 10	10.00 10	9.80 10	11.30 10	3.22 9	5.33 9
		Controlling	11.70 10	15.40 10	9.10 10	11.20 10	12.30 10	14.10 10	6.55 9	8.33 9

[a] Cell Means

[b] Number of Subjects per Cell

toward George by Jack than toward Jack by George (dependent variable 5). It is also clear that specific independent variables cannot be pointed to as directly causal. This problem was discussed further in the discussion section.

Two third-order interactions were significant for this dependent variable. These interactions moderated the interpretation of most of the lower order interactions and main effects reported in Table 9, and therefore were analyzed first. The first of these was a significant race of subject x role of Jack x race of George x sex of experimenter interaction. The means for the interaction are presented graphically in Figure 18. Analysis of the simple effects and the pattern of the means indicated that the source of the interaction is the presence of a male experimenter which caused more complex attributions by the black and white subjects. When a female experimenter was present, both the black and white subjects responded in a similar manner (see Figure 18). That is, with a female experimenter present, if Jack and George were coworkers and George was black, all subjects attributed a high degree of hostility toward Jack by George while somewhat less hostility was attributed when Jack was a foreman. Even less hostility was attributed by the subjects when George was white and Jack a foreman and the least hostility was attributed when Jack was a coworker and George was white. This last attribution was especially true for white subjects. This interpreation was confirmed by a significant simple role played by Jack x race of George (B X C) interaction at the female experimenter level of sex of experimenter ($F = 5.72$, $p < .05$) and a significant simple, simple B X C interaction at the white subjects-female experimenter level of race of subjects x sex of experimenter ($F = 4.45$, $p < .05$). The simple, simple B X C interaction at the black subjects-female experimenter level approached but did not achieve significance ($F = 3.71$, N.S.).

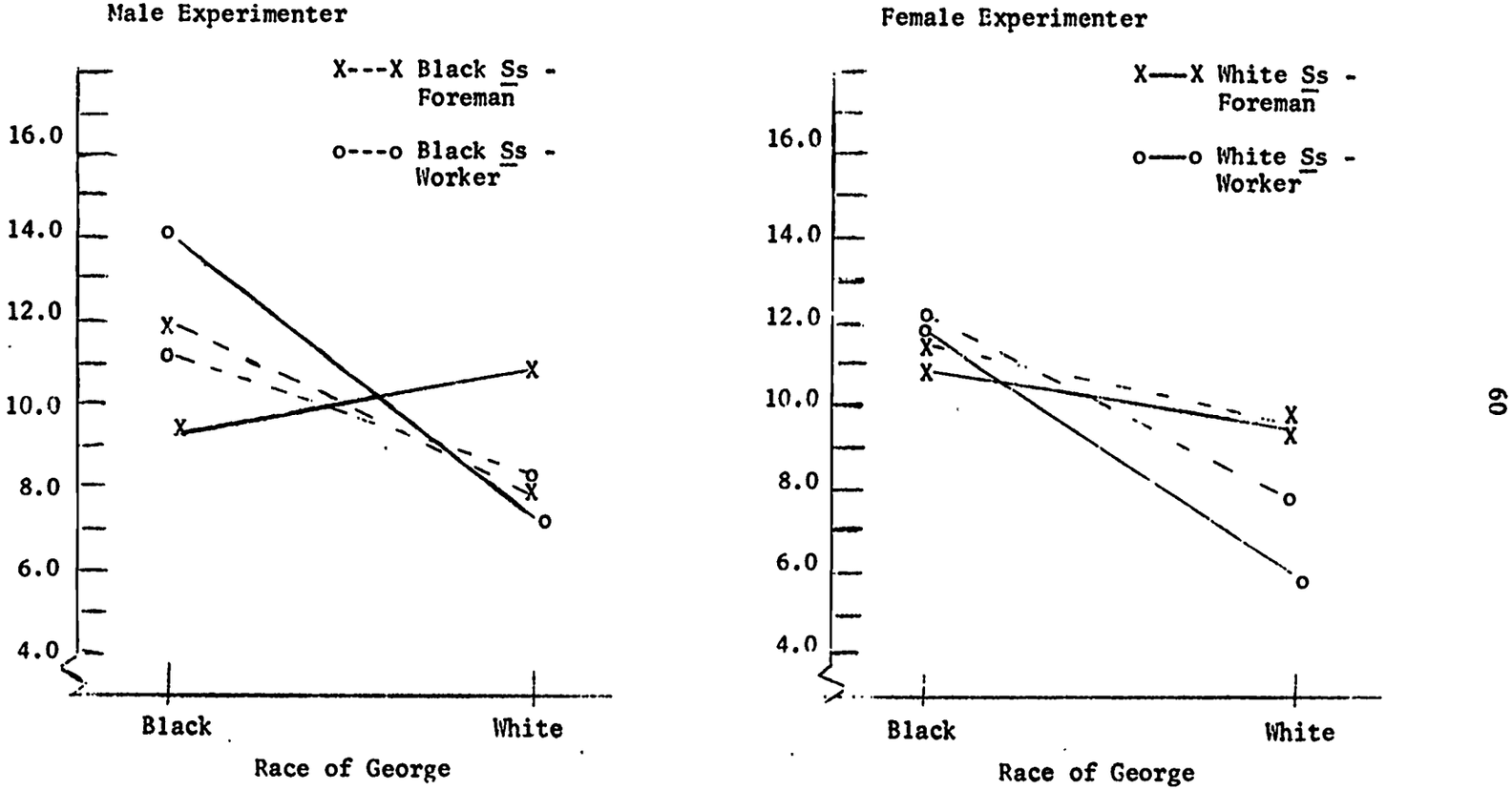


Figure 18. Graphic representation of the effect of race of subject x role played by Jack x race of George x sex of experimenter on hostility toward George by Jack. Levels of sex of experimenter are graphed separately.

As mentioned earlier, the presence of a male experimenter was the primary source of this interaction (see Figure 18). For black subjects it meant an almost mirrored image of their attributions in the presence of a female experimenter. That is, greatest hostility was attributed when George was black and Jack a foreman while the least hostility was attributed when George was white and Jack a foreman. Again, however, the simple, simple role played by Jack x race of George interaction at the black subjects-male experimenter level of A X D was nonsignificant ($F = 3.03$, N.S.). On the other hand, attributions by white subjects in the presence of a male experimenter were somewhat similar to their attributions in the presence of a female experimenter except that when Jack was a foreman, greater hostility by Jack toward George was perceived when George was white than when he was black. This was confirmed by a simple, simple role played by Jack x race of George interaction at the white subjects-male experimenter level of A X D ($F = 16.67$, $p < .01$).

This differential attribution by the white and black subjects in the presence of a male experimenter produced a simple race of subject x role played by Jack x race of George (A X B X C) interaction in the male experimenter level of sex of experimenter ($F = 13.31$, $p < .01$) and was primarily responsible for the A X B X C interaction reported in Table 11. The means for this interaction are easily derived from Figure 18 by collapsing the sex of experimenter variable. The means for the black subjects in the presence of a male and female experimenter tend to cancel each other leaving only a simple main effect for C at the black subjects level of A ($F = 18.24$, $p < .01$). The means for the white subjects, reinforce each other and preserve the simple, simple role played by Jack x race of George (B X C) interactions reported above as a simple B X C interaction at the white subjects level of A ($F = 19.10$, $p < .01$).

At this point, it is clear that the white subjects' attributions were primarily responsible for the role played by Jack x race of George interaction reported in Table 11. The pattern of means for this interaction can be derived from Figure 18 and is similar to the patterns for white subjects discussed above. Finally, the simple, simple main effects for race of George were significant within all the levels of race of subject x role played by Jack x sex of experimenter reported above at well beyond the .01 level. This clearly indicated that when George was black, Jack was perceived as having greater hostility toward George than when he was white except in the white subjects-foreman-male experimenter cells where the pattern was reversed (see Figure 18; also Table 11). This effect, in general, tends to confirm Trend 3 concerning the greater importance of the race of George in the more "intimate" behaviors.

The second third-order interaction reported in Table 11 was a significant race of subject x race of George x degree of warmth x degree of freedom interaction. The means for this interaction are shown graphically in Figure 19. Analysis of the simple effects and the pattern of the means indicated that the source of the interaction was differential attributions by the black and white subjects depending on George's race when Jack gave a cold, autonomous response to George's request. Specifically, when the subject is of the same race as George, a cold autonomous reply by Jack produced greater attributions of hostility toward George than when they are of different race, which supports Trend 2. This was confirmed by significant simple, simple degree of warmth x degree of autonomy interactions at the black subjects-George black and white subjects-George white levels of race of subject x race of George ($F = 5.65$, $p < .05$ and $F = 4.03$, $p < .05$, respectively). Figure 19 also

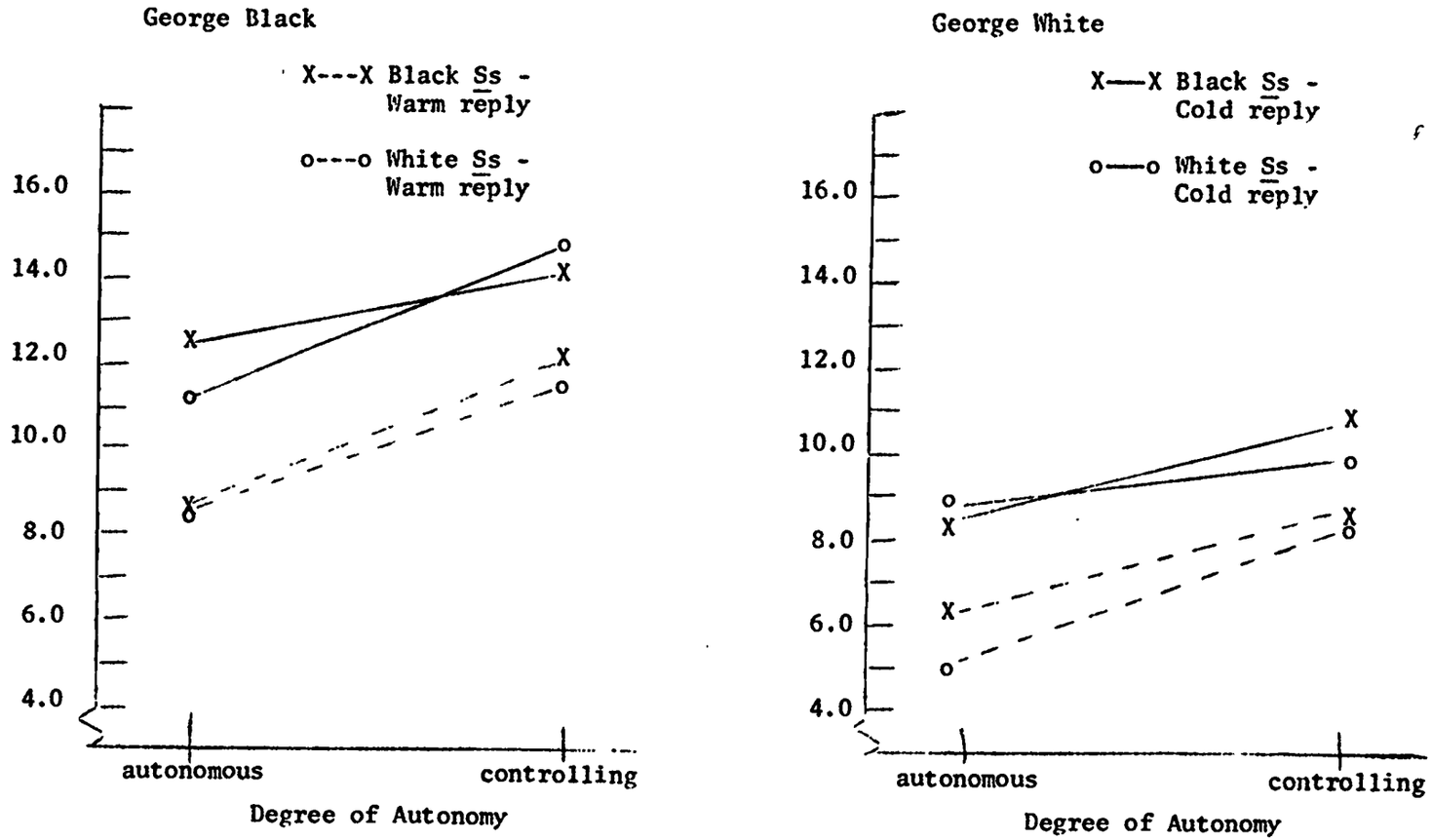


Figure 19. Graphic representation of the effect of race of subject x race of George x degree of warmth x degree of autonomy on hostility toward George by Jack. Levels of race of George are graphed separately.

clearly indicates the pattern of the main effects for race of George (C), degree of warmth (E), and degree of freedom (F). In general greater hostility by Jack toward George was attributed by the subjects when George was black, when Jack gave a cold reply, or when Jack gave a controlling reply. The race of George main effect gives clear support for Trend 3.

The final interaction reported in Figure 18 was a significant role played by Jack x degree of warmth x degree of autonomy interaction. The means are presented graphically in Figure 20. Analysis of the simple effects and the pattern of the means indicated that the source of the interaction was similar to that reported for the other third-order interaction above. That is, when Jack's reply was cold and autonomous, the subjects attributed greater hostility toward George when Jack was a worker than a main effects model would predict. This was confirmed by a significant simple degree of warmth x degree of autonomy interaction at the worker level of B ($F = 8.41$, $p < .01$). Figure 20 demonstrates this effect clearly. It also clearly supports the expectations of less sensitivity to a cold, autonomous vs. a cold, controlling reply when Jack was a worker given by Trend 3.

Superordination of Jack to George and subordination of George to Jack. The results of the analysis of variance for this dependent variable are summarized in Table 13 (only significant interactions are reported) and the means for each cell are presented in Table 14. This was the only other dependent variable in which the relationship between Jack and George was symmetrical (intimate friendship between Jack and George was also symmetrical). The grand mean was 11.67 which compared with a scale midpoint of 9.0. This suggested that subjects, in general, attributed a subordinate role to George and a superordinate role to Jack.[5] The cell means in Table 14 tended to confirm this in that only six of the 64 cells had means less than 9.0.

[5]We shall refer to this variable as "subordination of George to Jack" during the following analyses with the reciprocity of superordination of Jack to George as understood.

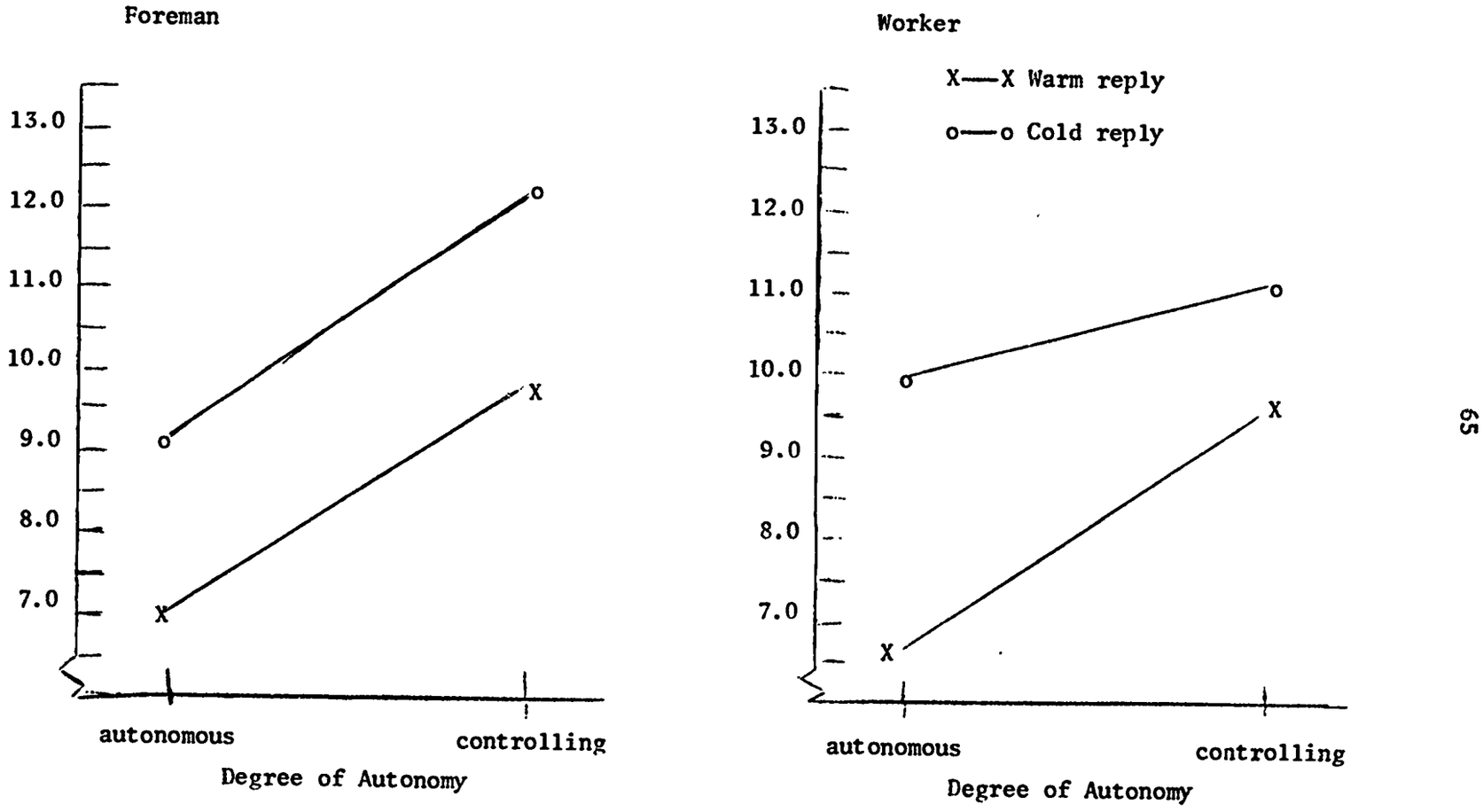


Figure 20. Graphic representation of the effect of role played by Jack x degree of warmth x degree of autonomy on hostility toward George by Jack. Levels of role played by Jack are graphed separately.

Table 13

Analysis of Variance Summary Table for Superordination of Jack to George and Subordination of George to Jack[a]

Variance Accounted for by ω^2/R^2	Source of Variation	df	Mean Square	F Ratio
	Between Groups			
.018/.069	Race of S			
.018/.069	Race of Subject (A)	1	309.741	10.313**
.025/.093	Role Played by Jack (B)	1	431.142	14.356**
.008/.031	Race of George (C)	1	134.081	4.464*
	Sex of Experimenter (D)	1	0.345	< 1
.013/.051	A X B X C X D	1	227.280	7.568**
	Ss Within Groups	140	30.033	
	Within Groups			
	Degree of Warmth (E)	1	11.426	< 1
.011/.042	B X E	1	42.651	6.129*
.008/.030	B X C X E	1	29.623	4.257*
.010/.038	B X C X D X E	1	38.661	5.555*
	E X Ss Within Groups	140	6.959	
.029/.105	Degree of Autonomy (F)	1	119.346	16.502**
	F X Ss Within Groups	140	7.232	
.025/.092	E X F	1	87.251	14.162**
.007/.027	C X D X E X F	1	24.254	3.937*
	E X F X Ss Within Groups	140	6.161	

[a]Due to unequal cell frequencies, the approximate method of unweighted means was used (Winer, 1962, pp. 222-224).

*p < .05
**p < .01

Table 14

Cell Means for Superordination of Jack to George and Subordination of George to Jack

Race of Subject	Sex of Exp.	Degree of Freedom	Role Played by Jack: Foreman — Race of George: Black — Warm	Foreman — Black — Cold	Foreman — White — Warm	Foreman — White — Cold	Worker — Black — Warm	Worker — Black — Cold	Worker — White — Warm	Worker — White — Cold
Black	Male	Autonomous	11.54[a] 11[b]	13.18 11	10.38 8	12.21 8	7.45 11	8.73 11	10.50 8	9.62 8
		Controlling	13.27 11	13.09 11	9.62 8	12.12 8	10.54 11	10.18 11	12.25 8	11.25 8
	Female	Autonomous	11.10 10	12.50 10	11.00 10	12.10 10	11.08 12	10.58 12	7.44 9	9.33 9
		Controlling	12.40 10	12.1 10	12.60 10	11.00 10	11.41 12	11.58 12	9.67 9	8.89 9
White	Male	Autonomous	12.27 11	12.45 11	11.40 10	12.80 10	11.38 8	13.25 8	11.22 9	9.22 9
		Controlling	13.09 11	12.90 11	14.40 10	14.70 10	13.75 8	13.75 8	12.78 9	8.89 9
	Female	Autonomous	13.40 10	14.20 10	11.00 10	11.90 10	11.20 10	11.80 10	10.55 9	12.56 9
		Controlling	14.70 10	14.80 10	13.00 10	13.00 10	12.80 10	11.80 10	12.78 9	8.33 9

[a] Cell Means

[b] Number of Subjects per Cell

Again the four significant main effects reported in Table 13 accounted for the majority of the systematic variance, but their interpretation must be based on the higher order interactions in which they appear. However, it should be noted at this point that for the first time, degree of warmth (E) did not appear as a main effect. It did, however, appear in five of the seven interactions which suggested that the degree of warmth still had an important effect on the direction of the subjects' attributions.

There were three significant third-order interactions for this dependent variable. The first was a significant race of George x sex of experimenter x degree of warmth x degree of freedom interaction. The pattern of the means is shown graphically in Figure 21. Analysis of the simple effects and the pattern of the means indicated that the interaction was primarily due to more complex attributions when George was white, while a main effects model was sufficient to account for the pattern of means when George was black (again supporting Trend 3). This was confirmed by significant simple main effects for degree of autonomy at both levels of race of George ($F = 11.40$, $p < .01$ when George was black and $F = 6.09$, $p < .05$ when George was white), but the simple degree of warmth x degree of autonomy interactions and simple sex of experimenter x degree of warmth x degree of autonomy interactions were significant at the George white level only ($F = 11.07$, $p < .01$ and $F = 5.22$, $p < .05$, respectively). More specifically, when George was black, subjects attributed the least amounts of subordination of George to Jack when Jack's reply was autonomous rather than controlling. This effect tended to be greater, however, when Jack's reply was also warm. Figure 21 gives the exact pattern of these means.

When George was white, the subjects attributions were more sensitive to the presence of the experimenter. Specifically, the source of the two

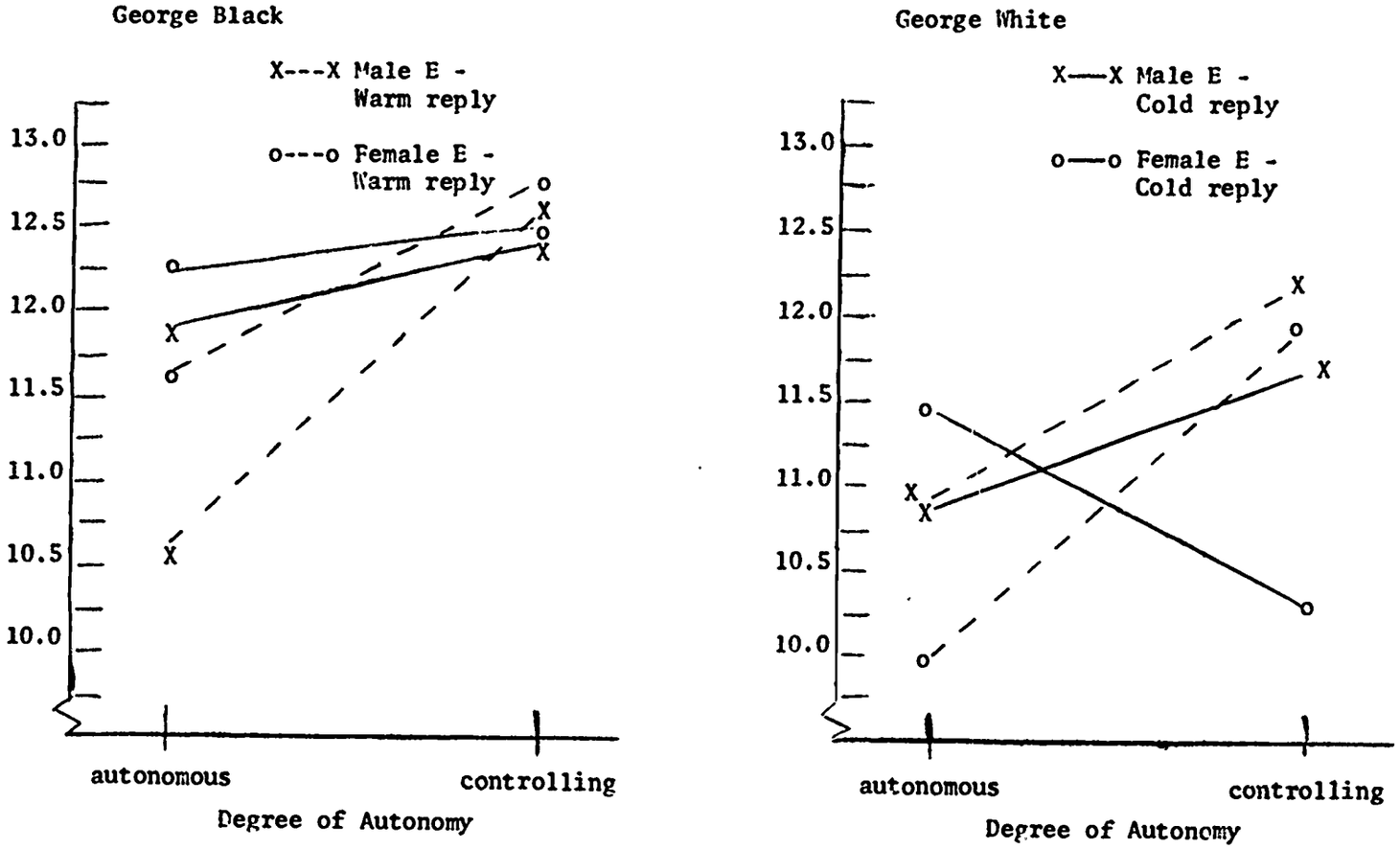


Figure 21. Graphic representation of the effect of race of George x sex of experimenter x degree of warmth x degree of autonomy on superordination of Jack to George and subordination of George to Jack. Levels of race of George are graphed separately.

simple interactions reported above was primarily a reversal of the pattern of means when a female experimenter was present and Jack's reply was generally cold. In contrast, when a male experimenter was present, the subjects pattern of attributions did not differ appreciably from the pattern when George was black (consistent with the main effect for C, the level of subordination attributed was less when George was white). This was confirmed by a significant simple, simple degree of warmth x degree of autonomy interaction at the George white-female experimenter level of race of George x sex of experimenter only ($F = 15.75$, $p < .01$) while only a simple, simple main effect for degree of autonomy was significant at the George white-male experimenter level ($F = 6.35$, $p < .05$). The exact pattern of these means is given in Figure 21. It was the simple, simple degree of warmth x degree of autonomy interaction at the George white-female experimenter level of race of George that was primarily responsible for the degree of warmth x degree of autonomy interaction reported in Table 13. The exact pattern of the means is easily derived from Figure 21.

The second significant third order interaction was a role played by Jack x race of George x sex of experimenter x degree of warmth interaction. The pattern of the means is presented in Figure 22. Analysis of the simple effects and the pattern of the means indicated that the source of the interaction was due to more complex attributions by the subjects when a male experimenter was present while a main effects model containing only the role played by Jack and the race of George was sufficient to account for the attributions when a female experimenter was present. This was confirmed by significant simple main effects only for role played by Jack and race of George at the female experimenter level of D ($F = 8.40$, $p < .01$ and $F = 4.98$, $p < .05$, respectively) while a simple main effect for role played by Jack was significant at the male level

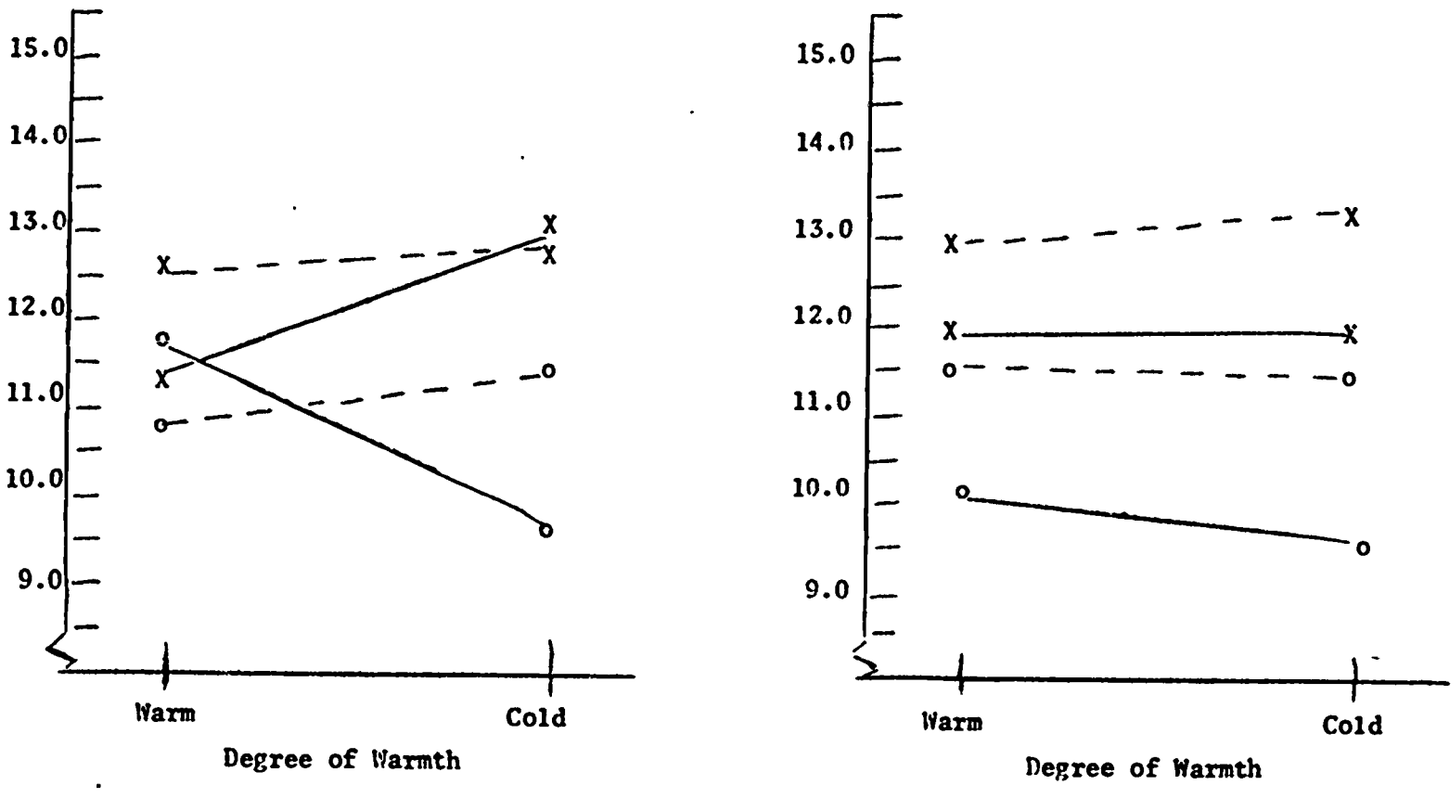


Figure 22. Graphic representation of the effect of role played by Jack x race of George x sex of experimenter x degree of warmth on superordination of Jack to George subordination of George to Jack. Levels of sex of experimenter are graphed separately.

($F = 6.05$, $p < .05$) plus a significant simple role played by Jack x degree of warmth interaction and a significant simple role played by Jack x race of George x degree of warmth interaction ($F = 6.62$, $p < .01$ and $F = 11.03$, $p < .01$, respectively). Again the complex attributions of the subjects in the presence of a male experimenter occurred only when George was white. Specifically, when George was white and Jack's reply was warm, subjects attributed the same amount of subordination by George regardless of Jack's role. However, when Jack's reply was cold, subjects attributed a great deal of subordination when Jack was a foreman and very little subordination when Jack was a worker. This was confirmed by a significant simple, simple role played by Jack x degree of warmth interaction at the George white-male experimenter level of race of George x sex of experimenter only ($F = 16.22$, $p < .01$). In all other cells of the role played by Jack x race of George x sex of experimenter x degree of warmth interaction, a main effects model accounted for the pattern of the means (see Figure 21). Finally, it was clear that the simple, simple role played by Jack x degree of warmth interaction reported above was primarily responsible for both the role played by Jack x race of George x degree of warmth and role played by Jack x degree of warmth interactions reported in Table 13. The exact pattern of the means for these interactions can be easily derived from Figure 21.

The remaining third order interaction was a significant race of subject x role of Jack x race of George x sex of experimenter interaction. The pattern of the means for this interaction are shown graphically in Figure 23. Analysis of the simple effects and the pattern of the means indicated that the source of the interaction was more complex attributions by the black and white subjects in the presence of a male experimenter while a main effects model was sufficient to account for their attributions when a female

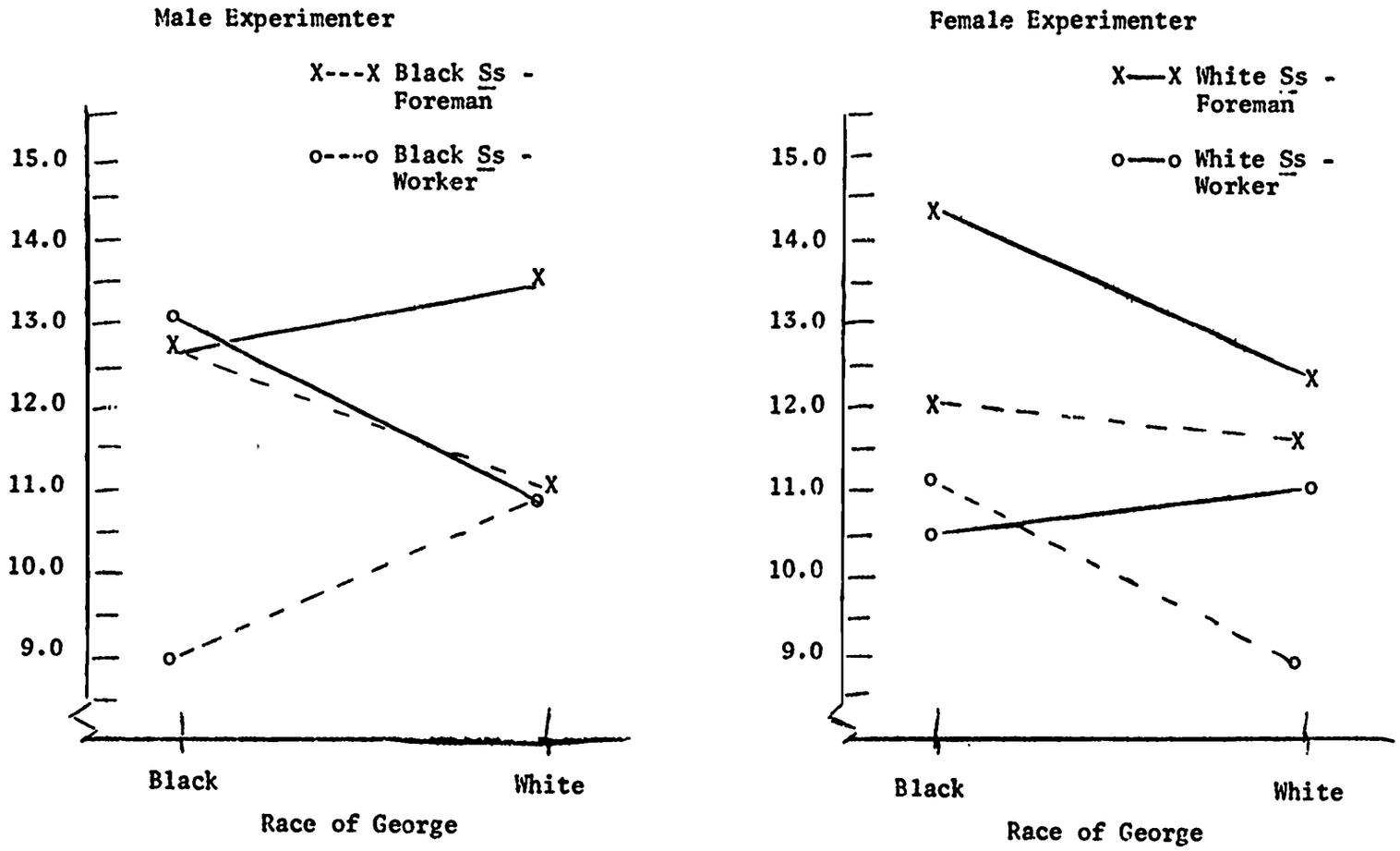


Figure 23. Graphic representation of the effect of race of subject x role played by Jack x race of George x sex of experimenter on superordination of Jack to George and subordination of George to Jack. Levels of sex of experimenter are graphed separately.

experimenter was present. This was confirmed by significant simple main effects for race of subject and role played by Jack at both levels of sex of experimenter ($F = 5.02$, $p < .05$ and $F = 6.06$, $p < .05$, respectively for the male experimenter cells and $F = 5.29$, $p < .05$ and $F = 8.39$, $p < .01$, respectively for the female experimenter cells) plus a significant simple race of subject x role played by Jack x race of George interaction at the male experimenter level only ($F = 6.83$, $p < .01$) and a significant simple main effect for race of George at the female experimenter level of D ($F = 4.97$, $p < .05$).

More specifically, when the experimenter was male, black subjects attributed less subordination of George to Jack than the white subjects did. Moreover, the pattern of the means for black subjects was almost a mirror image of the pattern for the white subjects. That is, black subjects attributed equivalent subordination of George to Jack regardless of Jack's role when George was white while white subjects attributed equivalent subordination regardless of Jack's role when George was black (i.e., when George was of a different race than the subject, Jack's status in relation to George did not affect the subjects' pattern of attributions as expected from Trend 2). On the other hand, Jack's role was a significant factor when George was a member of the same race as the subject. In this case, much greater attribution of subordination of George to Jack occurred when Jack was a foreman and much less occurred when he was a worker than when George was of a different race than the subject. This was confirmed by significant simple, simple role played by Jack x race of George interactions at the black subjects-male experimenter and white subjects-male experimenter levels of race of subject x sex of experimenter ($F = 4.00$, $p < .05$ and $F = 3.83$, $p < .06$, respectively).

Application of a main effects model to the pattern of means when a female experimenter was present was only approximate and therefore somewhat misleading (see Figure 22). For black subjects, the main effects model seems to have the best fit, while for white subjects, the pattern appears to be more similar to that reported for the male experimenter cells. In spite of these reservations, all the significant effects are within the main effects model and therefore was assumed to account for the systematic variance when a female experimenter was present. Finally, the main effect for race of George, with minor exceptions clearly supports Trend 3 concerning intimate behaviors.

APPENDIX B

Below are the nine conversations for experiment II. Each conversation has been labeled and a short description given.

Conversation I: Four Disagreements at the Level of Facilities

J: Hey man, whatcha doin' with my tools? I told you not to use 'em. They cost me a lot of money.

G: Hey cool it! Nothin's gonna happen if somebody else uses your tools.

J: I dunno. Some people mess up everything they touch.

G: Ah, you worry too much.

J: Dammit, these tools cost a lot of money and I don't let anybody use 'em. Can't you understand that?

G: Sure, I understand but you're getting excited over nothin'. I'm not gonna ruin your damn tools.

J: Look, George, I just told you these tools cost a lot. If you want to use tools like these, buy your own and keep your hands off mine.

G: Awright, awright--I'll use somebody else's next time.

Conversation II: Four Disagreements at the Level of Roles

G: How come I have to do this job, Jack?

J: Cause you haven't done it in a long time.

G: Lots of the other guys haven't done it for a long time either.

J: Well, somebody's gotta do it, George, and this time it's your turn.

G: What about Alex? He hasn't done it for years.

J: Alex is busy doin' something else.

G: Well what about Dave? He's just sittin' on his ass today.

J: No, he's not, George. He's got another job lined up for today and you don't.

Converation III: Four Disagreements at the level of Norms.

G: Hey Jack, come here and give me a hand.

J: To hell with you. If you can't ask politely, don't ask.

G: Come off it man, you're wasting time.

J: Either you ask me nice, or I ain't gonna help you.

G: Jack, you're a real pain in the ass.

J: I don't mind helpin', but the way you ask bugs the hell out of me.

G: OK, OK. Would your honor consent to assist me, please?

J: Makin' fun of me is no way to get any help either.

Conversation IV: Four Disagreements at the Level of Values

J: God, George, what a mess around your bench. I can't stand to look at it.

G: Come off it, Jack. A little dirt never hurt anybody.

J: I know dirt won't kill you, but it looks terrible.

G: I'm not here to be a janitor; I'm here to do my own job.

J: Yeah, but somebody might trip over this junk and break something, too.

G: People aren't made of glass. If they trip, they aren't gonna break anything.

J: You don't care about anybody but yourself, do you George?

G: Ah, Jack, get off my back.

Conversation V: Four Disagreements--One each at the Level of Facilities, Roles, Norms, and Values.

J: George, get the broom and sweep up this junk.

G: The broom's no good. I need a vacuum cleaner. Besides, it's not my job.

J: Yes, it is. You made the mess, you clean it up.

G: Then why do we have a clean-up man in this shop?

J: He has enough to do without picking up after you. Everybody should clean up his own junk.

G: I'm a skilled worker, not a floor cleaner. Besides a little junk on the floor isn't gonna cause this shop to close down.

J: Yeah, but somebody might trip over this junk and break something.

G: Ah, get off my back. People aren't made of glass.

Conversation VI: Three Disagreements--One each at the Levels of Facilities, Roles, and Norms--and One Agreement at the Level of Values.

J: George, get the broom and sweep up this junk.

G: The broom's no good. I need a vacuum cleaner. Besides, it's not my job.

J: Yes, it is. You made the mess, you clean it up.

G: Then why do we have a clean-up man in this shop?

J: He has enough to do without picking up after you. Everybody should clean up his own junk.

G: I'm a skilled worker, not a floor cleaner. Besides a little junk on the floor isn't gonna cause this shop to close down.

J: Yeah, but somebody might trip over this junk and break something.

G: I guess you're right, it could be dangerous. I didn't think of that.

Conversation VII: Two Disagreements--One each at Level of Facilities and Roles. Two Agreements--One each at Norms and Values.

J: George, get the broom and sweep up this junk.

G: The broom's no good. I need a vacuum cleaner. Besides, it's not my job.

J: Yes, it is. You made the mess, you clean it up.

G: Then why do we have a clean-up man in this shop?

J: He has enough to do without picking up after you, George. Everybody should clean up his own junk.

G: Yeh, Jack, but I've got a job to do and it takes all day.

J: There's another thing too. Somebody might trip over this junk and break something.

G: I guess you're right, Jack, it could be dangerous. I didn't think of that.

Conversation VIII: One disagreement at Facilities and Three Agreements--One each at Roles, Norms and Values.

J: George, get the broom and sweep up this junk.

G: The broom's no good. I need a vacuum cleaner. Besides, it isn't my job.

J: It's not, but around here everybody has agreed to clean up their own area.

G: OK, Jack, I'll pick up the mess after I finish the job.

J: There's another thing too. Somebody might trip over this junk and break something.

G: I guess you're right, Jack, it could be dangerous. I didn't think of that.

Conversation IX: Four Agreements--One each at Facilities, Roles, Norms and Values.

J: George, get the broom and sweep up this junk.

G: I didn't think it was my job.

J: It's not, but around here everybody has agreed to clean up his own area.

G: OK, Jack, I'll pick up the mess after I finish the job.

J: There's another thing too. Somebody might trip over this junk and break something.

G: I guess you're right, Jack, it could be dangerous. I didn't think of that.