BEHAVIORAL ASSESSMENT OF INTERPERSONAL SKILL AMONG TYPE A AND B COLLEGE STUDENTS

by

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Abstract

The Type A behavior pattern (TABP) is a coronary-prone response style characterized by intense ambition, competition, preoccupation with deadlines, and time-urgency. Anger may be the most detrimental aspect of the overall behavior pattern, but few studies have examined how Type As display anger in daily interactions. This study assessed anger expression as well as general conversational skill among Type As and Bs in representative situations. Type As and Bs were also classified based on degree of self-reported anger with skill differences examined among these four groups as well. Behavioral assessment occurred during challenging and nonchallenging role play scenes and a deception period in which confederates interrupted subjects' progress on a task. Observers, confederates, and subjects rated anxiety, anger, assertiveness, general demeanor, overall social skill, and interest during these conditions. Type As expressed anger less appropriately than Bs in challenging scenes but had greater overall social skill and made more interesting partners across conditions. Type As and Bs with minimal anger received better ratings than those with greater anger. Discussion addresses clinical significance of the TABP and directions for future assessment/treatment of coronary-prone behavior.

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Table of Contents

Introduction

Based on informal observation of cardiac patients in their medical practice, Friedman and Rosenman (1959) were the first to suggest that a particular interpersonal style might contribute to the development of coronary heart disease (CHD), the nation's leading cause of death in recent years. Friedman and Rosenman labeled this response style the Type A behavior pattern. According to these physicians, the TABP is characterized by intense ambition, competitive drive, constant preoccupation with deadlines, and a sense of time-urgency. Throughout the years, a great number of descriptors have become associated with the construct. Price (1982) has identified over 30 characteristics cited in the Type A literature between 1959 and 1979. Job-committment, hyperalertness, and aggressiveness are among the many qualities attributed to Type A individuals in addition to those originally outlined by Friedman and Rosenman. Thus, the TABP is a rather broad construct which has been implicated in the onset of CHD.

Several methods have been created to identify individuals with Type A characteristics. Currently, the most highly regarded assessment device is the Structured Interview (Rosenman & Friedman, 1961) which consists of questions regarding such topics as pace of

activity and satisfaction with achievements. The Structured Interview is actually a form of behavioral assessment in that subjects' nonverbal behavior and voice stylistics are weighted more heavily than content of replies in determining Type A status. Animated gestures, excessive motor activity, and rapid, modulated speech are among the behaviors which contribute to a Type A classification. The relative absence of these behaviors results in a Type B classification. Researchers believe that Type B individuals are more relaxed and easy-going than As and subsequently less likely to develop CHD.

In devising the Structured Interview, Friedman and Rosenman assumed that interpersonal challenge is necessary to elicit Type A responding in those so inclined. Otherwise, the behavior of Type As and Bs might be indistinguishable. Therefore, proper delivery of the Structured Interview involves asking questions in a challenging tone, interrupting subjects, and doubting the validity of their replies. For instance, if a subject states that he/she is always on time, the interviewer might respond, "Always?! You mean to tell me that you've <u>never</u> been late for an appointment?!" A number of experiments have since confirmed the notion that interpersonal challenge is required to produce differential overt and physiological responses

consistent with the theoretical Type A construct (e.g. Carver & Glass, 1978; Dembroski, MacDougall, Herd, & Shields, 1979; Glass, Krakoff, Contrada, Fulton, Kehoe, Nammucci, Collins, Snow, & Elting, 1980; Goldband, 1980; Holmes & Will, 1985; Pittner & Houston, 1980; Strube, Turner, Cerro, Stevens, & Hinchey, 1984; Van Egeren, 1979; Van Egeren, Fabrega, & Thornton, 1983; Van Egeren, Sneiderman, & Roggelin, 1982). Investigation of physiological responding is an important area of Type A research since repeated, excessive activation of the sympathetic nervous system may link the behavior pattern with cardiovascular disease endpoints (Cooper, Detre, & Weiss, 1981).

In response to cost-effectiveness concerns of administering and scoring the Structured Interview, several self-report measures of the TABP have been constructed. The most common of these is the Jenkins Activity Survery (Jenkins, Rosenman, & Friedman, 1967). Items on the Jenkins Activity Survey were patterned after Structured Interview questions. As such, this questionnaire assesses subjects' work-related habits, general pace of activity, and, to some degree, propensity for anger arousal using a multiple choice format. In addition to providing an overall Type A score, the Jenkins Activity Survey provides scores for three descriptive subscales which reflect Speed and

Impatience, Hard-Driving, and Job-Involvement aspects of the pattern. Another Type A questionnaire is the Framingham Type A Scale (Haynes, Levine, Scotch, Feinleib, & Kannel, 1978), developed within the context of an extensive epidemiological investigation of cardiovascular disease (CVD). The Framingham Type A Scale attempts to assess subjects' competitive drive, sense of time-urgency, and perception of job pressures using Likert-scale ratings of these various qualities.

The Structured Interview is favored over questionnaire methods of assessing the TABP because of its greater ability to predict CHD (Brand, Rosenman, Jenkins, Sholtz, & Zyzanski, 1978). The Jenkins Activity Survey and the Framingham Type A Scale have been shown to be significant, but weaker, predictors of CHD. The Jenkins Activity Survey subscales are not even correlated with CHD to a statistically significant degree. In addition, the Structured Interview also predicts other forms of CVD (i.e. atherosclerosis) more reliably than self-report measures (Blumenthal, Williams, Kong, Schanberg, & Thompson, 1978). Finally, the Structured Interview evidences the strongest relationship to physiological reactivity among all Type A measurement methods (Houston, 1983).

Despite many successes, a number of recent experiments have failed to find the anticipated

relationship between the TABP (measured by the Structured Interview) and CVD parameters (e.g. Dembroski, MacDougall, Williams, Haney, & Blumenthal, 1985; Krantz, Sanmarco, Selvester, & Matthews, 1979; Krantz, Schaeffer, Davia, Dembroski, MacDougall, & Shaffer, 1981; MacDougall, Dembroski, Dimsdale, & Hackett, 1985). Furthermore, recent literature reviews (Holmes, 1983; Myrtek & Greenlee, 1984) report less than impressive evidence that the TABP is linked to physiological reactivity. Such findings have led investigators to question the heterogeneous nature of the Type A construct and search for the "active" component(s) of the original, broadly defined behavior pattern.

This line of investigation has begun to suggest that the TABP's aggressive aspects account for cardiovascular hyperreactivity and disease while its other components (e.g. job committment) may not affect physical health. For instance, Siegel (1984) found externally focused anger, measured by a questionnaire/observational anger index, to be significantly associated with higher systolic and diastolic blood pressures among adolescents. In a 25-year longitudinal study, Barefoot, Dahlstrom, and Williams (1983) found hostility, measured by the Cook and Medley (1954) hostility scale of the MMPI, to be

significantly associated with both CVD and mortality among a sample of physicians. Haynes, Feinleib, and Kannel (1980) found unexpressed anger, measured by a psychosocial questionnaire administered as part of the Framingham Heart Study, and Framingham Type A Scale ratings to be independent predictors of CHD incidence. Williams, Haney, Lee, Kong, Blumenthal, and Whalen (1980) discovered Structured Interview ratings of Type A behavior and MMPI hostility scale scores to be independent predictors of atherosclerosis among patients hospitalized for diagnostic coronary arteriography. Furthermore, these hostility scores were associated more strongly than the Type A scores with this form of CVD.

Dembroski, et. al. (1985) failed to find a significant relationship between Structured Interview Type A scores and severity of atherosclerosis among hospitalized patients. However, recently developed Structured Interview component ratings of anger-in and potential for hostility produced such a relationship. Seven stylistic/clinical dimensions and five self-report factor scores comprise this relatively new component scoring system (Dembroski & MacDougall, 1983). The anger-in component rating is based on content of replies to SI questions regarding anger arousal and inability or unwillingness to express this

arousal. For instance, subjects who state that they become angry when kept waiting for appointments but never say or do anything in response are likely to receive high anger-in ratings. The potential for hostility component is defined as a stable mode of responding with states such as disgust, irritation, and contempt to a wide range of situations. Hostile remarks (e.g. "Most people are pretty stupid!"), the use of obscenity, argumentative replies, and condescending statements lead to high ratings on this component. MacDougall, et. al. (1985) also failed to find a significant relationship between Structured Interview global Type A ratings and atherosclerosis in a separate patient population. As in the previous study, this group of researchers found significant relationships between the anger-in and potential for hostility components and severity of arterial occlusions.

The research implicating hyperaggressiveness in the development of CVD suggests that investigators target this aspect of the overall TABP for treatment. Few Type A interventions have involved direct modification of aggressive responses.

The earliest Type A treatment programs (Roskies, Kearney, Spevak, Surkis, Cohen, & Gilman, 1979; Roskies, Spevak, Cohen, & Gilman, 1978; Suinn & Bloom,

1978) were based largely upon anxiety reduction techniques such as progressive muscle relaxation (PMR; Jacobsen, 1938). Unfortunately, this approach allows subjects to experience the sympathetic hyperreactivity believed detrimental to health prior to providing a means of alleviating these responses. An approach which prevents the original experience of physiological stress may be more beneficial. Furthermore, empirical findings reveal that relaxation based treatments have only occasionally produced significant reductions on physiological stress measures.

A second problem with relaxation-based therapies concerns the practicality of implementing such procedures. Conceivably, a technique requiring time out from the daily routine may lead to noncompliance in Type As who are typically reluctant to abandon job-related activities and compromise productivity.

A final, very important problem with relaxation-based therapies is that PMR fails to teach new behaviors for use in the interpersonally challenging situations which elicit physiological hyperreactivity. Type As may actually behave in a provocative manner which prompts others in their environment to continue responding to them in challenging ways. Matthews (1982) suggests that Type As engender negative reactions in others through their

abrupt, cold, self-directed interpersonal style. Failure to alter such maladaptive response styles may lead to continual confrontations with stressful situations and a continual need to engage in relaxation techniques which may or may not reduce levels of physiological stress. The typical dependent variables employed in relaxation-based treatment studies include self-report measures of anxiety and general Type A responding. Adequate assessment of relevant interpersonal responding, therefore, has not occurred within the context of this research. Until proper measures are employed, statements regarding interpersonal behavior change (or the lack thereof) remain speculative.

Schmieder, Friedrich, Neus, Rudel, and Von Eiff (1983) attempted to alter Type A behavior and concomitant physiological responding through a pharmacological intervention. These researchers treated Type A subjects with beta blockers, a widely prescribed form of hypertension medication. Schmieder and colleagues anticipated a suppression in overt behavior as well as the expected suppression of physiological responding. This hypothesis was based on patient reports (Betts & Blake, 1977) that beta blockers induce states of relaxation and well-being.

Subjects medicated with beta blockers demonstrated reduced increases in heart rate as well as systolic and diastolic blood pressure in response to a posttreatment Structured Interview. This was not true of control subjects receiving diuretics. Subjects treated with beta blockers also behaved in a Type B fashion at posttest significantly more often than members of the control group. Significant group differences appeared on several specific components of the TABP including response latency, rapid and accelerated speech, and loud and explosive speech. Hostility and competition remained unchanged.

While beta blockers apparently reduced physiological reactivity among Type As, this form of treatment did not effect the behavioral components of the pattern most associated with CVD. As is the case with psychological interventions based on relaxation techniques, pharmacological interventions fail to teach more appropriate ways of responding to interpersonally challenging situations. Furthermore, the physical and psychological side effects of beta blockers may reduce their popularity among Type A individuals.

Unlike the original researchers attempting to treat this problem (e.g. Suinn & Bloom, 1978), Levenkron, Cohen, Mueller, and Fisher (1983) designed an intervention directly targeting Type A responses.

The behaviors selected for modification in this study involved the time-urgent elements of the TABP rather than its aggressive components. For instance, subjects were encouraged to remove their wristwatches and to take less work home at night. While the researchers succeeded in reducing such behaviors among their subjects, as stated above, these responses now appear relatively less involved in the development of CVD.

In this study, the self-management techniques described were combined with relaxation therapy and cognitive restructuring (Meichenbaum, 1977). The latter component, in part, involved changing maladaptive cognitive responses to provocation. The overall treatment package resulted in a significant reduction in free fatty acid reactivity. Serum cholesterol levels, heart rate, and blood pressure remained unchanged. While assessment of psychological factors once again relied on self-report measures, an anger inventory (Novaco, 1975) was included to examine changes in perhaps the most deleterious aspect of the pattern. A significant reduction did occur on anger, although the researchers attributed this to the cognitive rather than the self-management component of treatment.

Jenni and Wollersheim had previously (1979) compared the efficacy of cognitive therapy with that of

relaxation-based therapy in reducing self-reported Type A behavior, self-reported anxiety, cholesterol levels, and blood pressure. In this case, cognitive intervention was based on the principles of rational-emotive therapy (Ellis, 1970) and was not specifically directed toward anger-producing situations. These researchers discovered that cognitive therapy was significantly more effective in reducing Type A responding. Both treatments resulted in significant decreases in anxiety, but neither had a significant effect on physiological responding. The utility of this form of cognitive therapy which primarily targeted time-urgency and job-involvement is questionable given recent research on the role of anger in CVD development. This contention is merely speculative since Jenni and Wollersheim did not include a measure of anger among their dependent measures.

In just the past several years, Type A interventions have begun to focus directly on the pattern's aggressive aspects. For instance, Thurman (1985) devised a cognitive therapy program based solely on Novaco's (1983) anger management techniques. Subsequent to implementation, he discovered significant reductions in self-reported Type A behavior, hostility, and irrational beliefs. Thurman did not assess physiological responding in this study.

Although cognitive therapy can apparently reduce anger arousal, like PMR, it does not teach subjects appropriate behavioral skills for use in stressful interpersonal situations. Recognizing this fact, Thurman also evaluated the effects of cognitive therapy combined with interpersonal skills training. Unfortunately, he found no significant advantage in including the latter treatment component. However, the conclusion that interpersonal skills training is ineffective in modifying aggressive behavior among Type As is unwarranted based on these findings. The self-report dependent measures employed in Thurman's study did not permit adequate evaluation of behavioral skill acquisition. Such is the case with almost every treatment study of the TABP to date. Apart from occasional use of the Structured Interview as a dependent measure (e.g. Schmieder, 1983), researchers have typically failed to include behavioral assessment of Type A responding in investigations of treatment efficacy.

Direct observation in representative situations is necessary before statements can be made regarding the efficacy of interpersonal skills training in altering behavior, including Type A anger expression. In fact, a thorough behavioral assessment of interpersonal skill among Type As (and Bs) seems warranted <u>before</u> designing

treatments of this type. Eisler and Frederiksen (1980) contend that demonstration of subjects' performance in representative interactions must be available in order to select appropriate behaviors for change.

Several groups of researchers have already examined the behavioral expression of anger among Type As and Bs (Carver & Glass, 1978; Holmes & Will, 1985; Strube, et. al., 1984; Van Egeren, 1979; Van Egeren, et. al., 1983; Van Egeren, et. al., 1982). Generally, these investigators have found that Type As exhibit a greater number of aggressive responses than Bs in interpersonally challenging situations. However, they have employed laboratory tasks in which the challenging stimulus and the available mode of responding are very unlike actual interpersonal conflict situations and response options.

In the Carver and Glass study, subjects completed a difficult perceptual motor puzzle while a confederate delivered a prearranged series of denigrating remarks concerning their attempts. Afterwards, subjects were instructed to oversee the confederate in a concept-learning task with electrical shocks available as a consequence for errors. Strube, et. al. employed similar methodology, substituting removal of points for administration of shock. In the Holmes and Will experiment, a confederate criticized subjects'

performance on a perceptual motor task. Subsequently, subjects were to "teach" the confederate a set of analogies with the opportunity to provide rewards (i.e. money) or punishments (i.e. aversive noise) for performance. Subjects in Van Egeren, et. al.'s (1983) study participated in a computer exercise in which they exchanged messages via a television screen with the computer itself, believing that they were communicating with another subject. Subjects could express feelings and intentions, make requests, punish or reward, and cooperate or compete with their "partner" in this fashion with the goal of earning monetary payoffs.

While the control associated with this methodology allows for internally valid interpretation of results (i.e. Type As generally behave more aggressively than Bs when prsented with an interpersonal stressor), external validity of these findings is far less certain. Criticisms delivered by an invisible partner unknown to subjects may have a very different impact than face-to-face criticisms from a well-known coworker. Furthermore, subjects are typically unable to resolve actual interpersonal conflict by administering shocks or monetary fines. In real life, some form of verbalization is usually required. Finally, subjects in these studies were able to behave aggressively then leave the experimental setting

unconcerned about any negative consequences of their actions. In naturalistic settings, individuals must concern themselves eith consequences such as being fired, losing a business deal, and being verbally or physically abused themselves.

Experimental Rationale

The primary purpose of the present study was to assess the parameters of interpersonal behavior among Type As to determine the appropriateness of a skills training intervention approach. The methodology for this study was adapted from that which is prominent in the social skills literature (Eisler & Frederiksen, 1980). Specifically, assessment situations were developed that are comparable to situations encountered in the natural environment. For instance, college students were confronted with a fellow student criticizing their choice of major and future occupation. While actual observations in the natural environment were considered unfeasible in this case, role play situations and a deception scenario were believed to be viable alternatives. Such methodology has not been employed in the Type A area to date. Although the Structured Interview may be considered a form of behavioral assessment, the interview situation is still somewhat atypical of situations individuals face on a day to day basis.

Interpersonal challenge has appeared to reliably produce aggression among Type As in past research. Thus, a set of challenging role play situations (in which confederates criticized subjects) comprised one experimental condition in the current study. A set of nonchallenging role play situations (in which confederates complimented subjects) comprised a second condition. While previous research indicates that Type As have not behaved aggressively in the absence of interpersonal challenge, the methodology employed was inadequate to assess other variations of interpersonal skill deficits. Some researchers (e.g. Price, 1982) suggest that Type As place little value on forming purely social relationships. Therefore, they may have poorly developed general conversational behaviors in naturalistic social settings. A third condition involved confederates interrupting subjects with neutral remarks during a timed task. This time-urgent condition was included to determine if nonchallenging interference with task completion would produce aggressive responding among Type As. Subjects were exposed to a male and a female confederate during each of these three conditions to assess potential differences in responding to members of each sex.

The present study compared the interpersonal behavior of Type As to the behavior of their Type B

counterparts within the experimental conditions described. Researchers in the area have traditionally assumed that Type B behavior represents a more adaptive style of responding which is not associated with increased somatic risk. Friedman, Harris, and Hall (1983) have recently questioned this notion, suggesting that Type Bs display different kinds of interpersonal skill deficits than As. For instance, Type Bs may be relatively nonassertive and lacking enthusiasm for their work. Such qualities could compromise their social and career development. Thus, teaching Type As to behave in a Type B fashion may be an inappropriate goal of therapy. Friedman, et. al. further contend that a subset of Type As may lack the aggressive characteristics of the pattern while some Bs may possess these aggressive attributes. This contention implies that the former group may not experience increased risk for CVD while the latter may, indeed, experience greater likelihood of developing cardiovascular problems.

The Structured Interview was chosen to classify subjects according to behavior type in the present study due to its superiority over other measures in predicting various aspects of CVD. Considering Friedman, et. al.'s contemporary reformulation of the Type A construct, subjects were categorized further

based on several dimensions of anger. A self-report measure, the Multidimensional Anger Inventory (MAI; Siegel, 1984), was selected for this purpose. The MAI provides scores on multiple aspects of anger. Hostility, anger-in, and anger-out subscales were employed here as these variables have been linked to cardiovascular hyperreactivity or disease in the recent literature.

The hostility subscale measures a general negative outlook on the environment even in the absence of explicit provocation. Items such as "People can bother me just by being around" reflect this construct. The anger-in subscale measures an inability or unwillingness to express anger. Items such as "I harbor grudges that I don't tell anyone about" reflect this behavioral style. Conversely, the anger-out subscale measures the tendency to express anger in an overt manner. Items such as "When I'm angry, I take it out on whoever is around" reflect this mode of responding. A total anger score was also used in the present classification scheme. This score was based on the above factors as well as anger frequency, duration, magnitude, and range of eliciting situations. The MAI was chosen over other available measures (e.g. Structured Interview component ratings, MMPI hostility

scale, etc.) to avoid difficulty interpreting results from a variety of measurement methods.

In the present study, outside observers, confederates, and subjects supplied ratings of the latter's interpersonal skill in each of the experimental conditions. Observers, with repeated access to videotapes, could theoretically provide the most accurate account of subjects' behavior during the interactions. However, confederates' ratings were included as they could supply data based on immediate and personal impressions. This was considered important in that people who actually interact with these subjects judge and respond to them without the opportunitty to remove themselves from the situation and evaluate their behavior from a distance. Finally, subjects rated their own behavior to determine whether their perceptions coincided with those of people viewing and experiencing their responses. Such information is important in planning treatment strategies.

Likert-scale ratings of six interpersonal skill dimensions served as dependent measures in the present study. The particular dimensions measured were qualities commonly assessed in the social skills and Type A literature (e.g. hostility). Although frequencies and durations of specific behaviors were

not measured, ratings were based on behavioral definitions of each dimension.

Experimental Hypotheses

In line with traditional delineations of the construct, Type As were generally expected to receive less competent ratings than Bs. This hypothesis was investigated via a multivariate analysis of variance comparing Type As and Bs within the experimental conditions described. Differences were expected to occur between the two groups on all dependent measures, however, the greatest difference was expected to occur on the anger variable since aggression is thought to be an integral part of the TABP. This hypothesis was examined via a series of two-way univariate analyses of variance conducted on each of the six dependent measures. Interpersonal skill deficits among Type As were expected to occur in response to the challenging manipulation more so than the nonchallenging and time-urgent manipulations. This hypothesis, examined via interactions between behavior type and condition in the multivariate and univariate analyses of variance, derives from past literature indicating that such challenge is necessary to elicit the aggression purportedly characteristic of this population. Greater between-group differences were expected to occur in the presence of male confederates since subjects (who were

all male) may not view females as potential competitors to the same extent as fellow males. This hypothesis was examined in the same manner as the last. In view of recent reformulations of the Type A constuct, Type A and B persons self-reporting minimal levels of anger were expected to appear more competent than A and B individuals self-reporting relatively greater levels of anger. This hypothesis was examined via multivariate and univariate analyses of variance comparing four groups of subjects across and within the experimental conditions.

Method

Subjects and Setting

Subjects were male undergraduates at Virginia Polytechnic Institute & State University recruited from Introductory Psychology classes to volunteer for the present study. Extra credit points were offered based on subjects' participation. No demographic or academic restrictions were placed on students during this recruitment or subsequent selection process. See appendices A, B, and C for consent forms approved by the Psychology Department's human subjects committee. Throughout each phase of the study, subjects received the rationale that the experiment was designed to assess how college students think and behave in response to typically encountered situations.

Subject selection consisted of two phases. In the first phase, the Multidimensional Anger Inventory (MAI; Siegel, 1984) was administered to 693 students during a number of mass testing sessions comprised of approximately 60 students each. See Appendix D. Students scoring in the upper and lower 25th percentile on the hostility, anger-in, anger-out, and total anger scales of this measure were eligible to proceed to the next phase of the selection process.

During phase two, the experimenter (blind to subjects' status on the MAI) individually administered the student version of the Structured Interview to 102 members of the original sample. See Appendix E. The experimenter scored the audiotaped Structured Interviews as well, designating 48 subjects Type A and 54 subjects Type B. The experimenter had been trained in administration and scoring of the Structured Interview at the Uniformed Services University of the Health Sciences (USUHS). A trained interviewer from this institution (blind to the experimenter's classifications) rated 33% of the 102 audiotaped Structured Interviews for reliability purposes. Interrater reliability was calculated to be 80%. Sixty-six of the 102 subjects interviewed agreed to participate in the experiment itself. Twenty-five Type As and 41 Type Bs remained in the study at this point. These were then divided according to the four MAI scales. Table 1 depicts the total number of subjects in each experimental group subsequent to this classification by self-reported anger.

Procedures

Conditions. Each subject's interpersonal behavior was assessed under three conditions. These included (1) a challenging role play condition, (2) a

Table 1

Total Number of Type A and B Subjects in Each Group Following MAI Classification

	Behavior Type	
MAI Scale	A	B
Hostility		
>	8	12
<	7	15
Anger-In		
>	10	13
<	9	13
Anger-Out		
>	12	13
<	9	15
Total Anger		
>	10	18
<	10	14

nonchallenging role play condition, and (3) a time-urgent deception condition.

The two role play conditions consisted of three different scenes intended to represent students' typical encounters. Undergraduate Behavior Modification students generated 12 interpersonal situations which they perceived to be reflective of their daily interactions. The experimenter, aided by undergraduate research assistants, selected three of these situations for use in the role play portion of this study. The three situations chosen involved: (1) discussion of college major, (2) discussion of dating, and (3) discussion of fraternities. In the challenging condition, a confederate disagreed with and insulted subjects' statements regarding each topic. In the nonchallenging condition, the confederate agreed with and complimented subjects' remarks. See Appendicies F and G for specific dialogue.

In the time-urgent deception condition, the confederate instructed subjects to complete a logic problem (see Appendix H), purportedly as part of the study. During the time allotted for completing this task, the confederate interrupted subjects with various questions regarding their progress and the task itself. The content of these interruptions and the tone in

which they were delivered was neutral. See Appendix I for actual dialogue.

Confederates. Two male and two female undergraduate research assistants served as confederates in the interactions described above. The confederates studied scripts of standard prompts, practiced their lines with pilot subjects, and received experimenter feedback on their performance before interacting with actual subjects. Confederates were blind to subjects' classification on both the MAI and the Structured Interview.

Each subject interacted with one male and one female confederate within the three experimental conditions. The two male and the two female confederates alternated participation in the experiment as their schedules permitted. Order of condition and confederate sex were counterbalanced across subjects.

Dependent Measures

The experimental interactions were conducted at the university's Psychological Services Center. Subjects were aware that these were being videotaped, but the videotape equipment was unobtrusively located behind a one-way mirror.

Two female undergraduate research assistants were trained as observers in order to make ratings of subjects' interpersonal behavior based on the

videotaped interactions. The observers were blind to subjects' MAI and Structured Interview status. For each of the experimental conditions, observers made Likert-scale ratings of six dimensions of subjects' responding. Ratings could range from one to six with one representing the least and six representing the greatest degree of the dimension in question. The six dimensions rated included: (1) anxiety, (2) inappropriate anger expression, (3) assertiveness, (4) general demeanor, (5) overall social skill, and (6) interest in interacting with the subject outside of the experiment. Observers studied training manuals describing specific behaviors associated with each of these dimensions prior to making their ratings (see Appendix J). They practiced making ratings on videotapes of pilot subjects until an acceptable level of agreement was achieved. One observer rated all 66 tapes, and her ratings alone were used in the data analysis. The other observer rated 29 (44%) of the tapes. A Pearson correlation procedure was conducted to determine direction and magnitude of the relationship between the two observers' ratings.

Confederates also rated subjects' behavior during the experiment. Immediately following the completion of each condition, they filled out rating forms assessing the same six dimensions of interpersonal

responding as the observer forms. While confederates were exposed to the same training manuals as observers, interconfederate reliability was not assessed at any point. Subjects rated their own behavior after each experimental condition using scales similar to the confederate and observer scales. Subjects were not exposed to the training manual and, thus, relied on personal definitions in describing their behavior. See Appendices K, L, and M for observer, confederate, and subject rating scales respectively.

Reliability of confederates' implementation of the experimental manipulations was assessed in this study. Observers viewed the videotapes blind to the order of condition presentation for any given subject. Upon viewing the tape, they were to identify each interaction as the challenging, nonchallenging, or time-urgent condition.

Design & Analysis

Interrater correlations. All statistical analyses were performed separately on observer, confederate, and subject data sets. Correlations were calculated to determine the degree of relationship among these three sources of ratings.

Extraneous variables. Possible order effects of condition and confederate sex were investigated by entering these two variables into separate two-way

MANOVAs along with behavior type. Possible differences between the two male and between the two female confederates were assessed similarly.

Behavior type. A repeated measures 2 (between) x 6 (within) design was used to evaluate the differential effects of condition combined with sex of confederate on Type A and B subjects. The six within conditions, then, were challenging male (CM), nonchallenging male (NM), time-urgent male (TM), challenging female (CF), nonchallenging female (NF), and time-urgent female (TF). Initially, a two-way MANOVA was performed which simultaneously examined all six rating scale items. Six two-way ANOVAs were then performed to determine differences on each item individually.

Behavior type/MAI scales. A repeated measures 4 (between) x 6 (within) design was employed to evaluate the differential effects of condition and sex of confederate on Type As and Bs classified according to hostility, anger-in, anger-out, and total anger MAI scores. A separate set of analyses was conducted for each of these four breakdowns. Each set of analyses included a two-way MANOVA involving all six dependent measures. This was followed by six two-way ANOVAs performed on each of these variables individually. Tukey's HSD test was then employed to isolate specific

areas of difference when significant findings occured among the four between factors.

Condition. The general effects of condition (regardless of behavior type or behavior type/MAI classification) were investigated in this study as well. Initially, a one-way MANOVA was performed on the six dependent measures. This was followed by six one-way ANOVAs examining each of these variables individually.

Results

Interobserver Correlations

Interobserver correlations were .80, .80, .82, .82, .86, and .76 for the dependent measures anxiety, anger, assertiveness, general demeanor, overall social skill, and interest respectively. A .83 correlation was obtained across dependent measures. Both observers correctly identified the condition being implemented by the confederate in every case viewed. Thus, reliability of experimental manipulations was 1.00.

Interrater Correlations

Table 2 depicts the correlations between observer and confederate ratings across behavior type and condition. Table 3 depicts the corresponding correlations between confederate and subject ratings. Table 4 illustrates the correlations between observer and subject ratings.

Extraneous Variables

MANOVAs revealed no significant order effects for condition or confederate sex. This was the case for observer, confederate, and subject data sets alike. However, within the confederate and subject data sets, MANOVAs indicated that significant differences were evident between the two male and between the two female confederates. Table 5 illustrates these significant findings.

Table 2

Correlations between Observer and Confederate Ratings across Behavior Type and Condition

Dependent Measure	Correlation Coefficient
Anxiety	***.19
Anger	****.39
Assertiveness	****.27
General Demeanor	****.39
Overall Social Skill	****.34
Interest	***.18

*p<.05 **p<.01 ***p<.001 ****p<.0001

Table 3

Correlations between Confederate and Subject Ratings across Behavior Type and Condition

Dependent Measure	Correlation Coefficient
Anxiety	***.18
Anger	****.52
Assertiveness	***.24
General Demeanor	****.52
Overall Social Skill	*.12
Interest	***.26

*p<.05 **p<.01 ***p<.001 ****p<.0001

Table 4

Correlations between Observer and Subject Ratings across Behavior Type and Condition

Dependent Measure	Correlation Coefficient
Anxiety	.06
Anger	****.24
Assertiveness	.07
General Demeanor	****.27
Overall Social Skill	*.07
Interest	***.12

*p<.05 **p<.01 ***p<.001 ****p<.0001

Table 5

Significant MANOVAS: Extraneous Variables by Behavior Type

		F	
Variable	Rater	Main Effect	Interaction
Male Confederate	CON	****6.93	1.69
Male Confederate	SUB	.81	*2.28
Female Confederate	CON	**1.61	.96

*p<.05 **p<.01 ***p<.001 ****p<.0001

Behavior Type

The MANOVAs conducted on observer, confederate, and subject data sets revealed no significant differences between Type As and Bs. However, subsequent ANOVAs indicated that significant differences exist between these groups on four of the dependent measures. See Table 6. Figures 1, 2, 3, and 4 depict the significant mean differences.

Figure 1 indicates that observers rated Type As significantly higher on the inappropriate anger expression variable. This occurred in challenging conditions with both the male and female confederate. In the first of these conditions, Type As obtained a rating of 3.00 while Bs obtained a rating of 2.44. In the second condition, Type As again obtained a rating of 3.00 while Bs obtained a rating of 2.39.

Figure 2 indicates that Type A subjects rated themselves as significantly more assertive in the nonchallenging condition with a male confederate. Type As achieved a rating of 4.42 while Bs achieved a rating of 3.59.

Figure 3 reveals that confederates viewed Type As as having significantly greater overall social skill across conditions. Type As received a rating of 3.46 while Bs received a rating of 3.25.

Table 6

ANOVAS: Behavior Type by Condition

		F	
Dependent Measure	Rater	Main Effect	Interaction
Anxiety	OBS	.11	1.21
	CON	1.31	1.67
	SUB	.15	.55
Anger	OBS	1.39	*2.51
	CON	1.19	.86
	SUB	.27	1.62
Assertiveness	OBS	1.99	1.59
	CON	1.21	1.68
	SUB	1.27	*2.55
General Demeanor	OBS	1.08	.69
	CON	1.98	.79
	SUB	1.73	.96
Overall Social Skill	OBS	1.79	1.99
	CON	*5.09	.56
	SUB	3.21	.67
Interest	OBS	.95	1.51
	CON	**10.18	2.11
	SUB	1.15	.24

*p<.05 **p<.01 ***p<.001 ****p<.0001

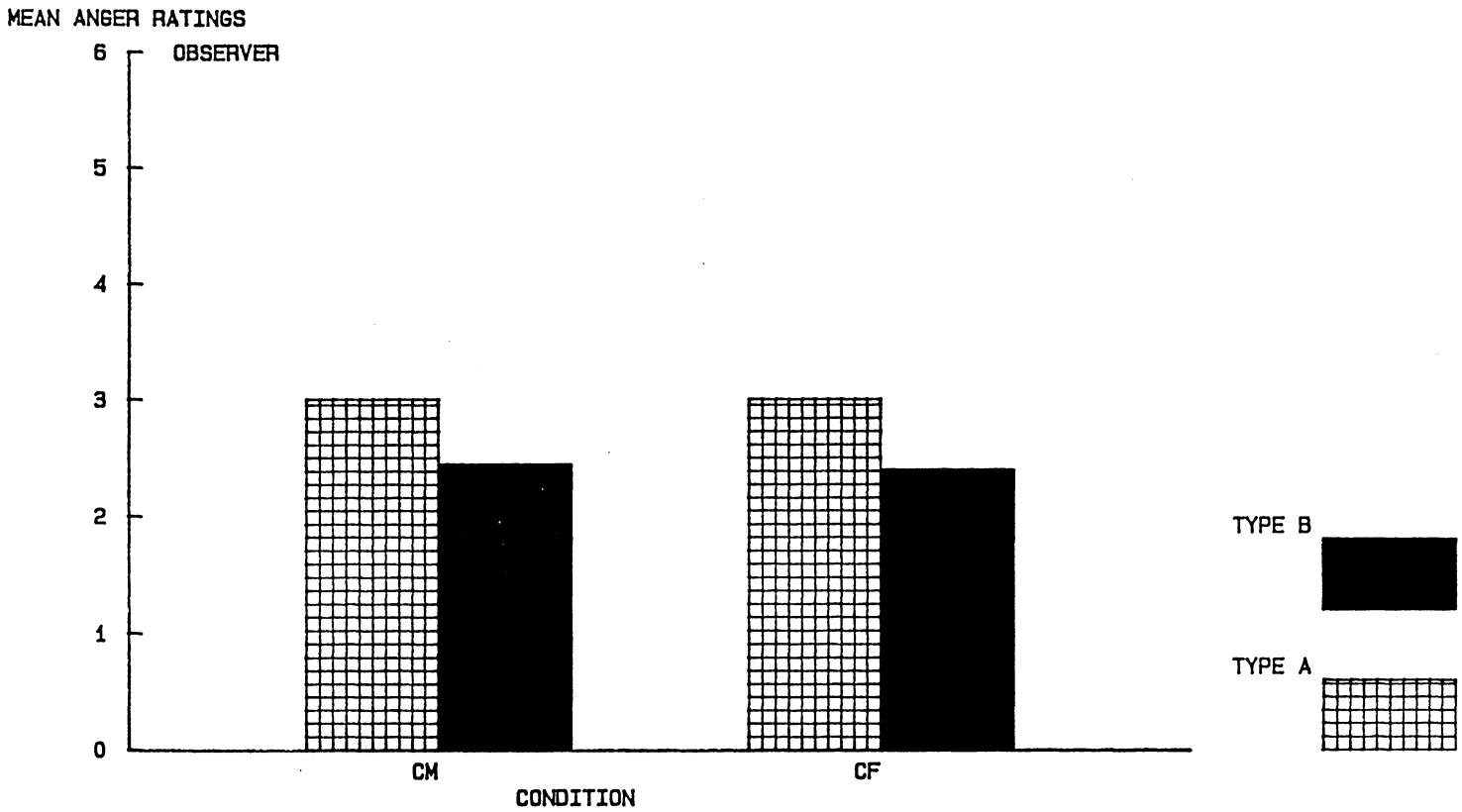

Figure 1. Significant differences between mean anger ratings: Behavior Type.

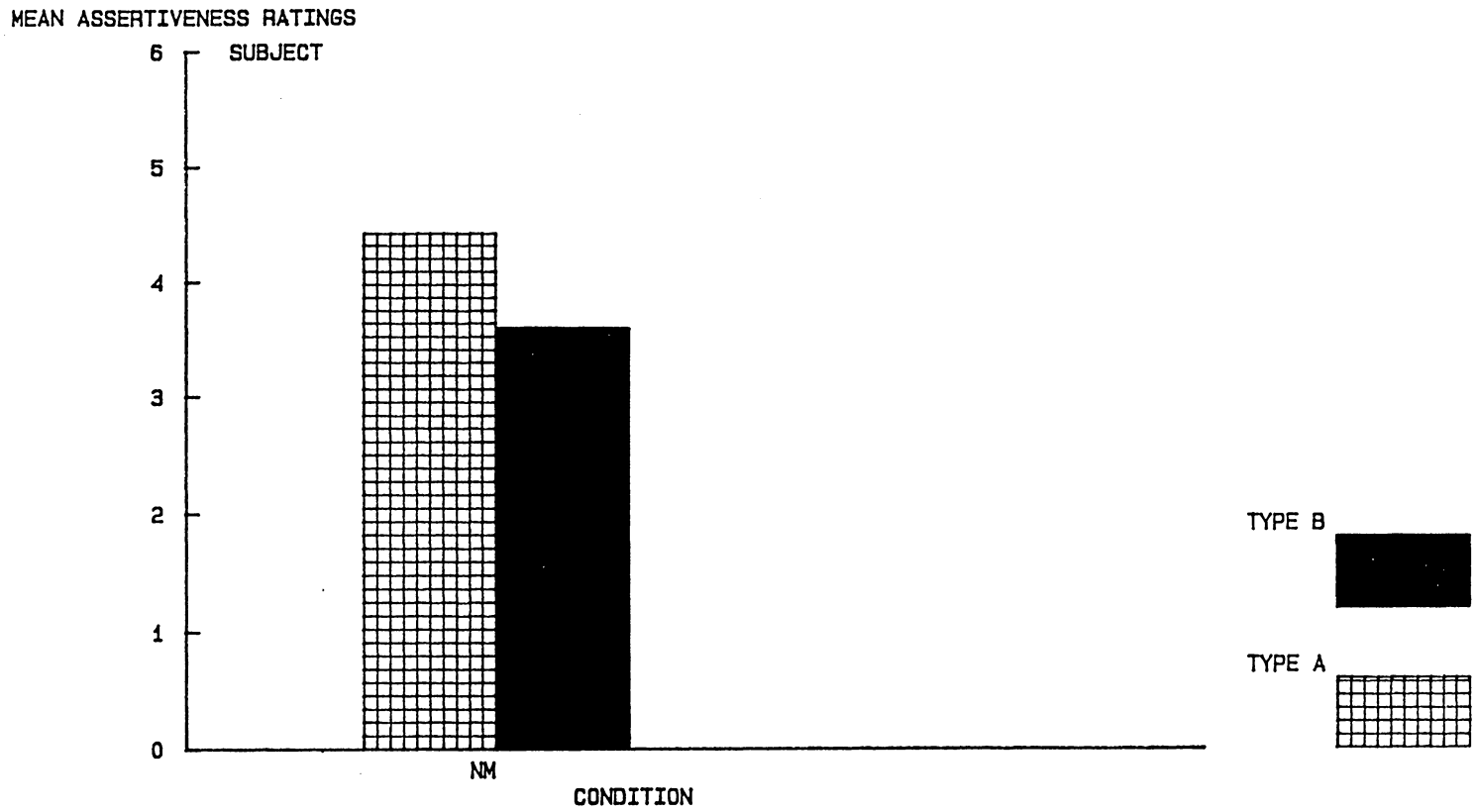

Figure 2. Significant differences between mean assertiveness ratings: Behavior Type.

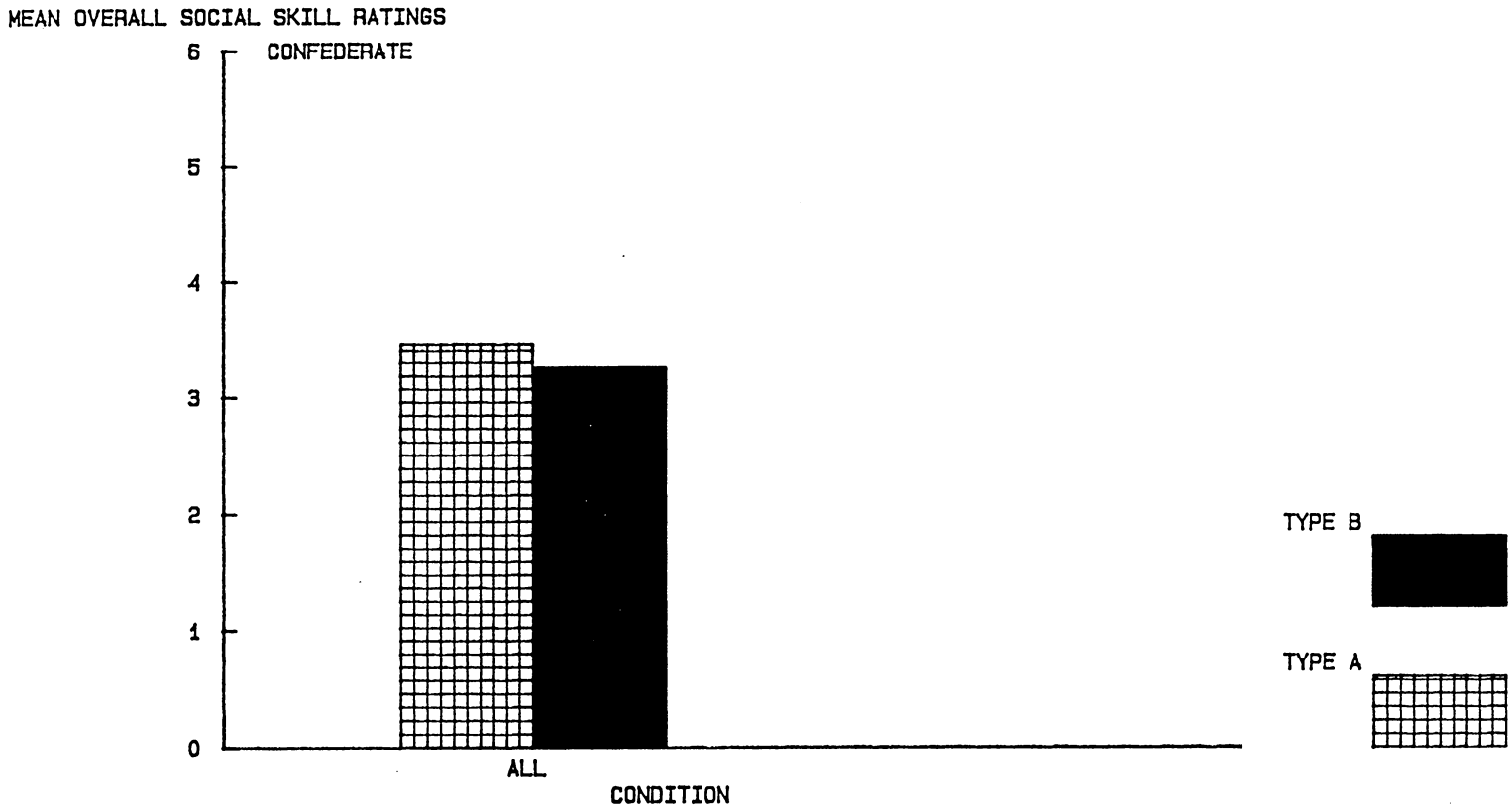

Figure 3. Significant differences between mean overall social skill ratings: Behavior Type.

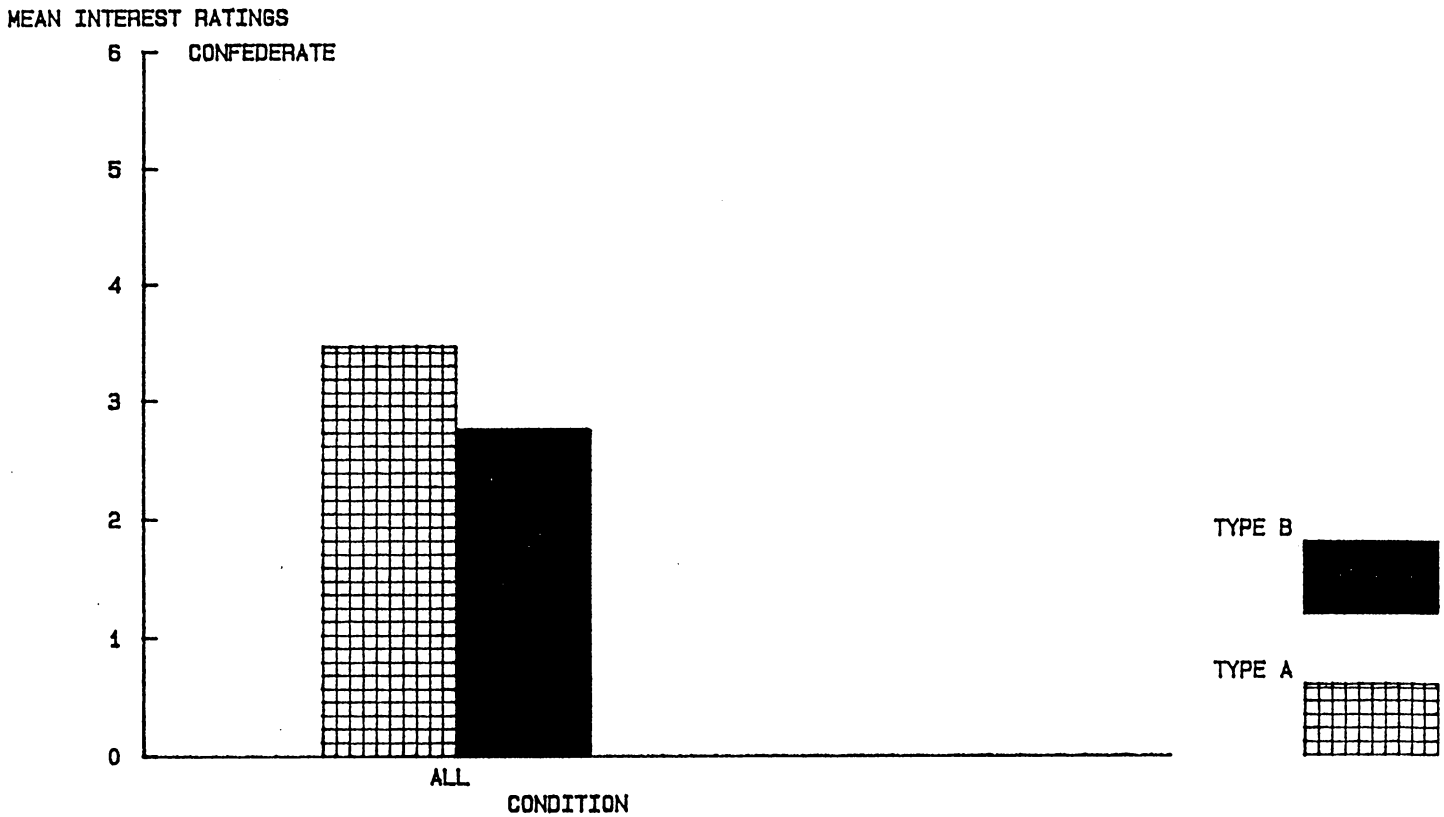

Figure 4. Significant differences between mean interest ratings: Behavior Type.

Finally, Figure 4 reveals that confederates were significantly more interested in interacting with Type As across conditions. Here, Type As received a rating of 3.46 while Bs received a rating of 2.75.

Behavior Type/Hostility

While these MANOVAs revealed no significant differences among hostile and nonhostile Type A and B subjects, seven of the subsequent ANOVAs produced significant findings. See Table 7. Hostility was the most successful of the four MAI classifications in producing significant differences among groups. The significant means are depicted in Figures 5, 6, 7, and 8.

Figure 5 indicates that, according to observers, hostile Type As expressed anger inappropriately to a significantly greater extent than nonhostile Bs regardless of condition. The former group obtained a rating of 2.42 while the latter obtained a rating of 1.45. Nonhostile Type As and hostile Bs obtained ratings of 1.61 and 1.93 respectively. These groups did not differ significantly from the others on the variable in question.

Figure 6 indicates that confederates viewed nonhostile Type As and Bs as significantly more assertive than hostile Bs across conditions. These groups obtained ratings of 4.15, 3.87, and 2.88

Table 7

ANOVAS: Behavior Type/Hostility by Condition

		F	
Dependent Measure	Rater	Main Effect	Interaction
Anxiety	OBS	.44	.77
	CON	1.17	.72
	SUB	.84	.52
Anger	OBS	*3.02	1.18
	CON	.60	.72
	SUB	.87	1.62
Assertiveness	OBS	1.30	.70
	CON	**5.83	.79
	SUB	*3.63	**2.29
General Demeanor	OBS	1.98	.89
	CON	****9.61	1.19
	SUB	***7.14	.42
Overall Social Skill	OBS	.46	.87
	CON	1.91	1.52
	SUB	2.08	.47
Interest	OBS	.31	.80
	CON	**5.60	1.20
	SUB	**6.82	1.12

*p<.05 **p<.01 ***p<.001 ****p<.0001

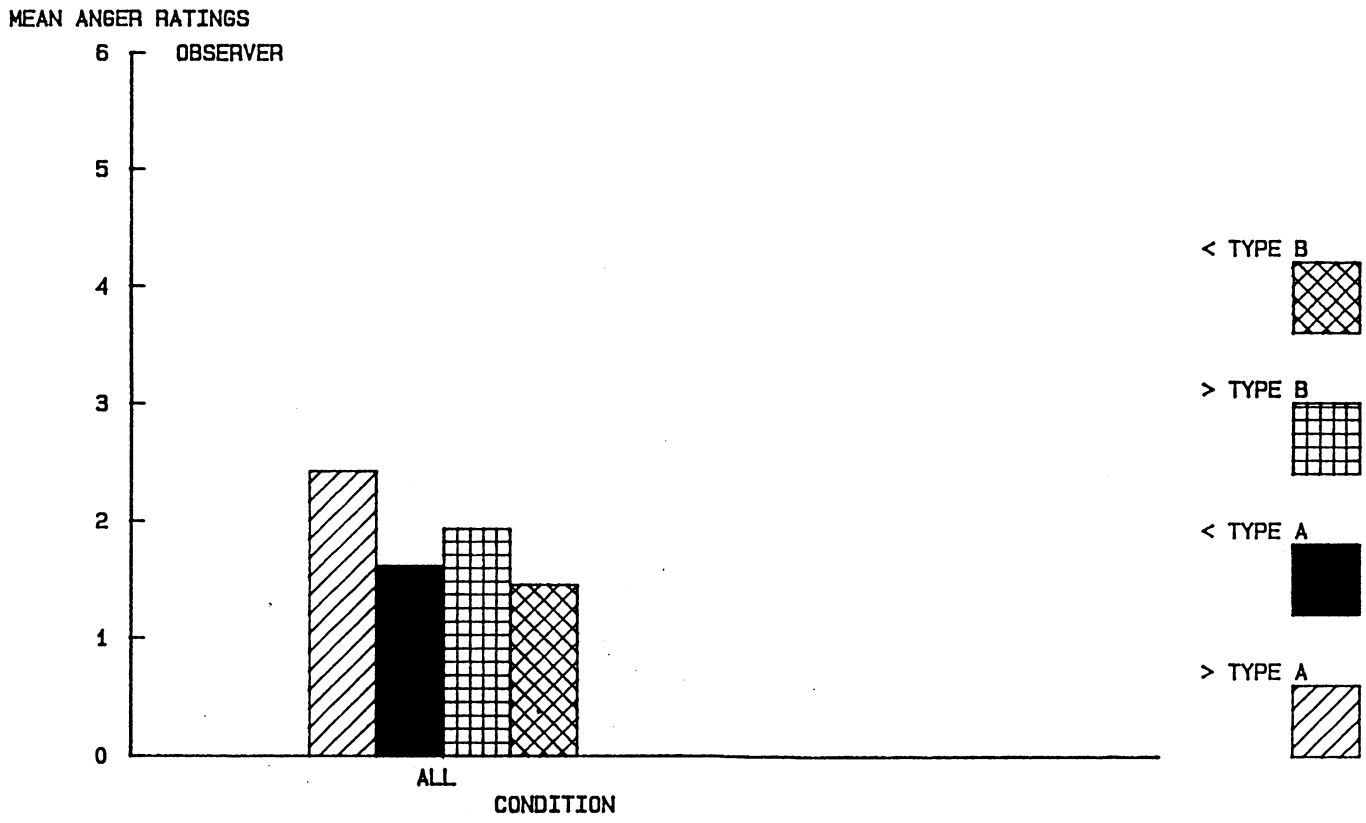

Figure 5. Significant differences among mean anger ratings: Behavior Type/Hostility.

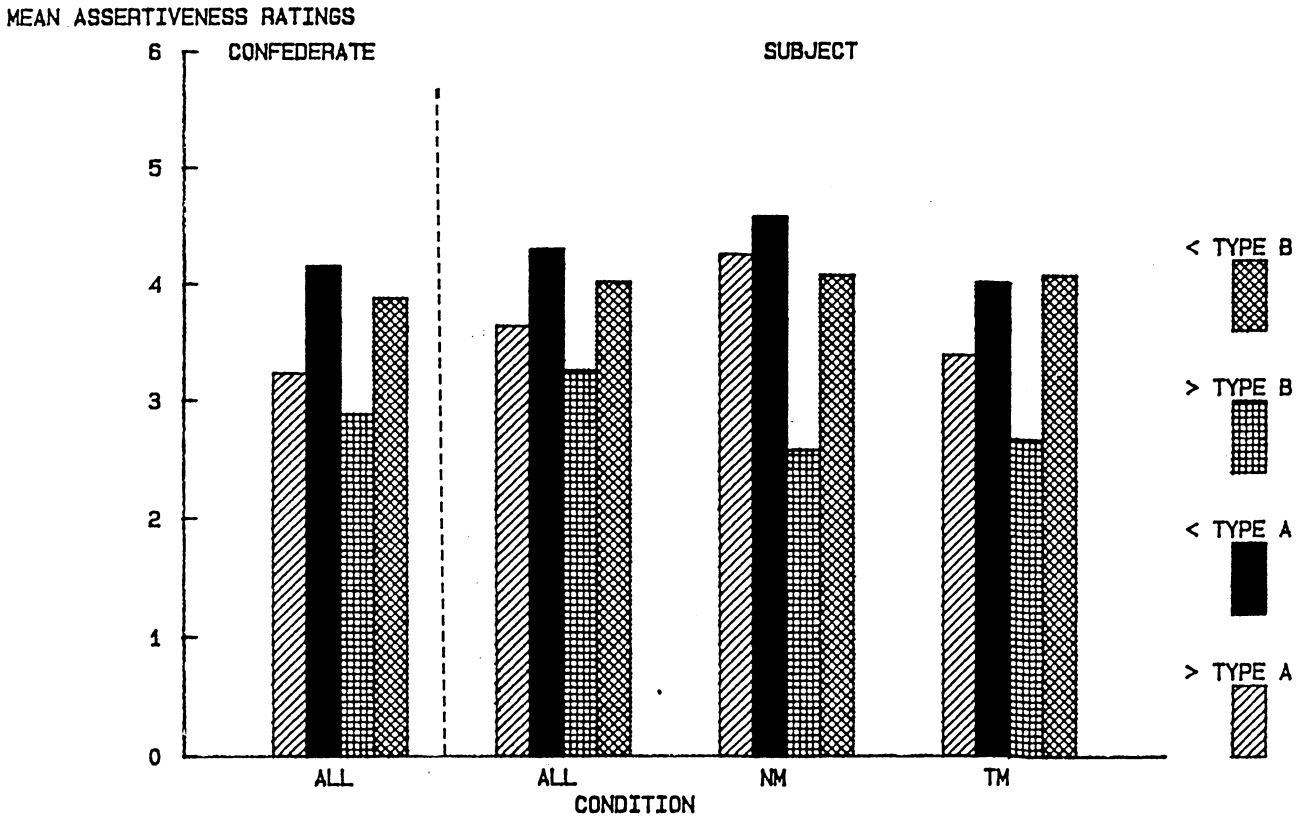

Figure 6. Significant differences among mean assertiveness ratings: Behavior Type/Hostility.

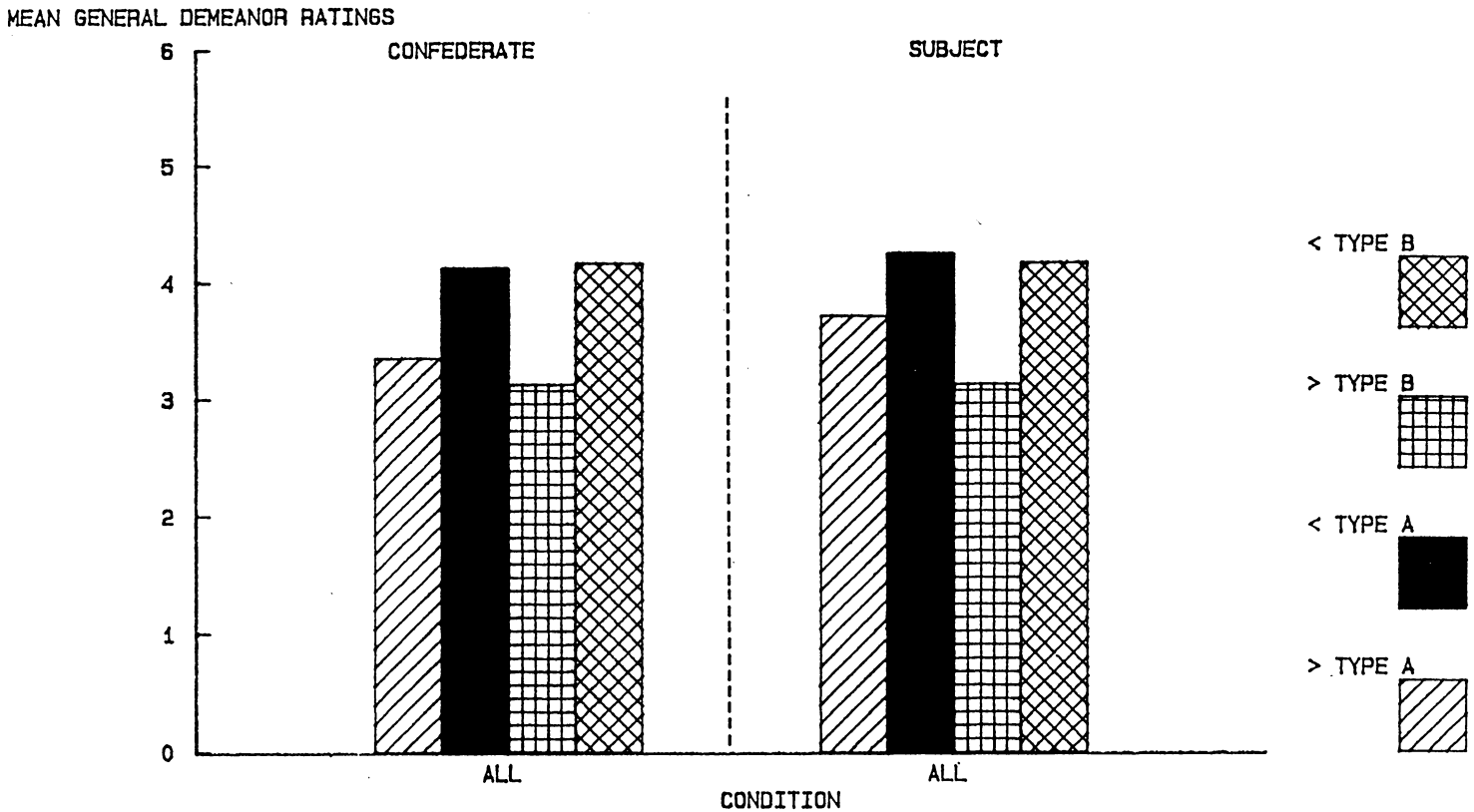

Figure 7. Significant differences among mean general demeanor ratings: Behavior Type/Hostility.

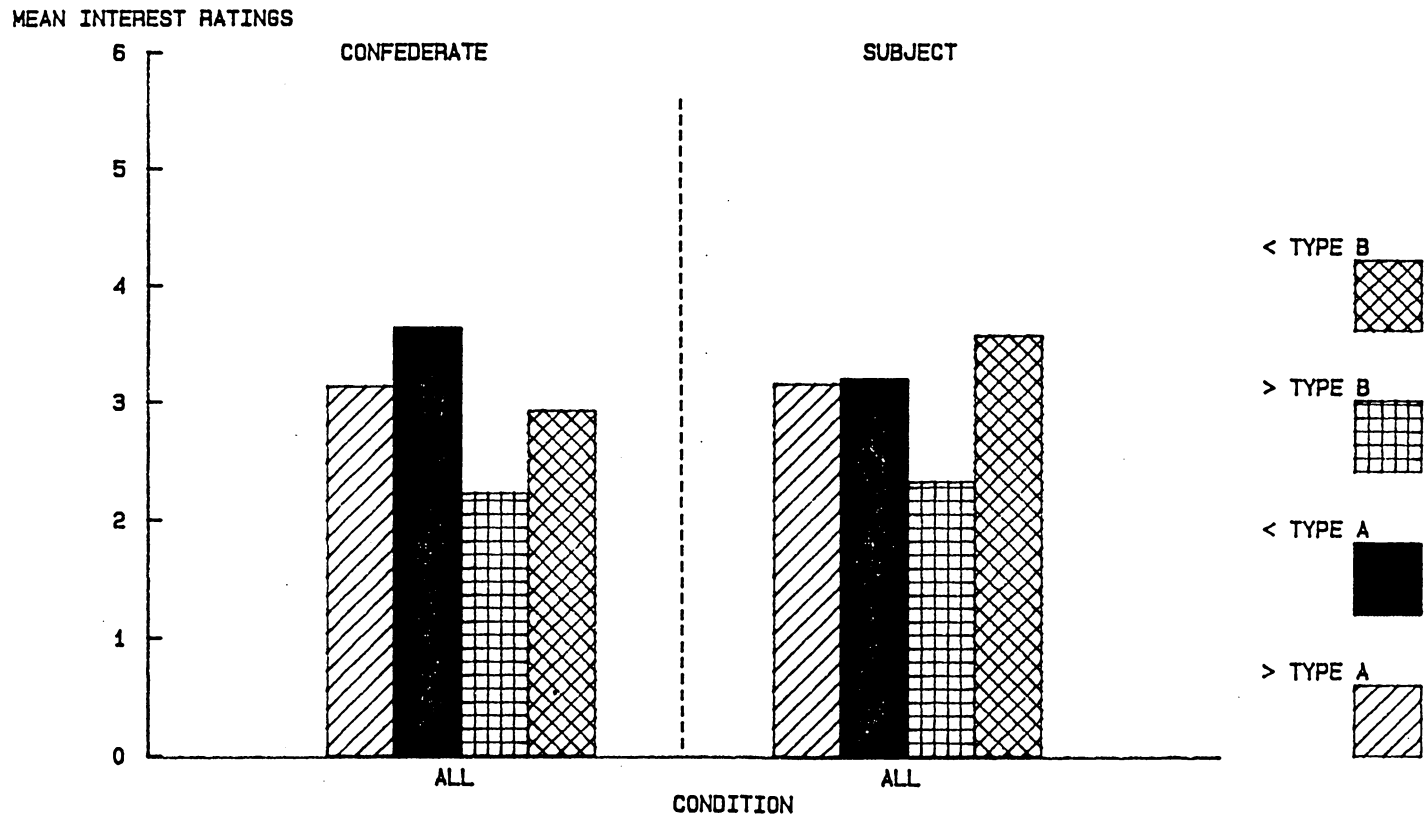

Figure 8. Significant differences among mean interest ratings: Behavior Type/Hostility.

respectively. Hostile Type As received a rating of 3.23 which did not differ significantly from the other values. Nonhostile Type A subjects rated themselves as significantly more assertive than hostile Bs across conditions, achieving ratings of 4.29 and 3.25 respectively. Hostile Type As and nonhostile Bs achieved respective nonsignificant ratings of 3.63 and 4.01 regardless of condition. In the nonchallenging condition with a male confederate, nonhostile Type As, hostile As, and nonhostile Bs rated themselves as significantly more assertive than the hostile B group. These groups achieved ratings of 4.25, 4.57, 2.58, and 4.07 respectively. In the time-urgent condition, hostile Type Bs perceived themselves as significantly less assertive than nonhostile Bs with ratings of 2.67 and 4.07 respectively. Hostile and nonhostile Type As achieved ratings of 3.38 and 4.00 respectively. These values did not differ significantly from the Type B ratings.

Figure 7 indicates that confederates rated nonhostile Type As and Bs as significantly more friendly in terms of general demeanor than hostile Bs regardless of condition. These groups obtained ratings of 4.12, 3.12, and 4.16 respectively. Hostile Type As obtained a nonsignificant rating of 3.35. As indicated, subject ratings revealed an identical

pattern of findings. Here, the four groups achieved ratings of 3.71, 4.24, 3.12, and 4.16.

Figure 8 indicates that confederates were significantly more interested in interacting with nonhostile Type As than hostile Bs outside of the experimental setting regardless of condition. These two groups received ratings of 3.63 and 2.22 respectively. Hostile Type As and nonhostile Bs received nonsignificant ratings of 3.13 and 2.92 respectively. This figure also indicates that hostile Type B subjects perceived themselves to be significantly less interesting than their nonhostile B counterparts with respective ratings of 2.32 and 3.56. Hostile and nonhostile Type As achieved nonsignificant ratings of 3.15 and 3.19 on this variable.

Nonhostile Type As and Bs received a greater number of significantly more favorable ratings in 43% (n=6) and 50% (n=7) of the 14 comparisons reported. Hostile Type As received significantly more favorable ratings in 7% (n=1) of these cases. Specifically, these hostile As viewed themselves as more assertive than hostile Bs in the nonchallenging interaction with a male confederate. Hostile Type Bs never obtained significantly more favorable ratings than any of the three other groups.

Behavior Type/Anger-In

The MANOVAs comparing Type As and Bs reporting differential probabilities of holding anger in were nonsignificant. Only two of the subsequent ANOVAs resulted in significant differences among the four groups. See Table 8. Figures 9 and 10 illustrate the significant mean differences.

Figure 9 reveals that, in the nonchallenging condition with a male confederate, Type As with a minimal tendency toward unexpressed anger rated themselves as significantly more assertive than Bs reporting maximal tendencies toward this response style. These groups achieved ratings of 4.56 and 3.31 respectively. Angry Type As and nonangry Type Bs achieved nonsignificant ratings of 4.30 and 3.39 respectively.

Figure 10 indicates that confederates were significantly more interested in interacting with Type As low on the anger-in dimension than Bs low on this dimension across conditions. These groups obtained respective ratings of 3.58 and 2.41. Angry Type As and Bs obtained nonsignificant ratings of 3.19 and 2.72 on this variable also across conditions. The nonchallenging condition with a female confederate produced the same pattern of results. Here, the four groups obtained ratings of 3.10, 4.00, 2.62, and 2.50. The time-urgent condition with the male confederate

Table 8

ANOVAS: Behavior Type/Anger-In by Condition

		F	
Dependent Measure	Rater	Main Effect	Interaction
Anxiety	OBS	.65	1.29
	CON	1.13	1.18
	SUB	1.36	1.21
Anger	OBS	1.25	1.19
	CON	1.10	1.10
	SUB	1.68	.51
Assertiveness	OBS	1.49	.61
	CON	.88	1.41
	SUB	1.14	*1.89
General Demeanor	OBS	.87	.79
	CON	1.78	1.02
	SUB	1.20	.89
Overall Social Skill	OBS	1.63	.81
	CON	1.72	1.09
	SUB	1.65	.86
Interest	OBS	1.63	.81
	CON	**4.71	*1.86
	SUB	1.51	.40

*p<.05 **p<.01 ***p<.001 ****p<.0001

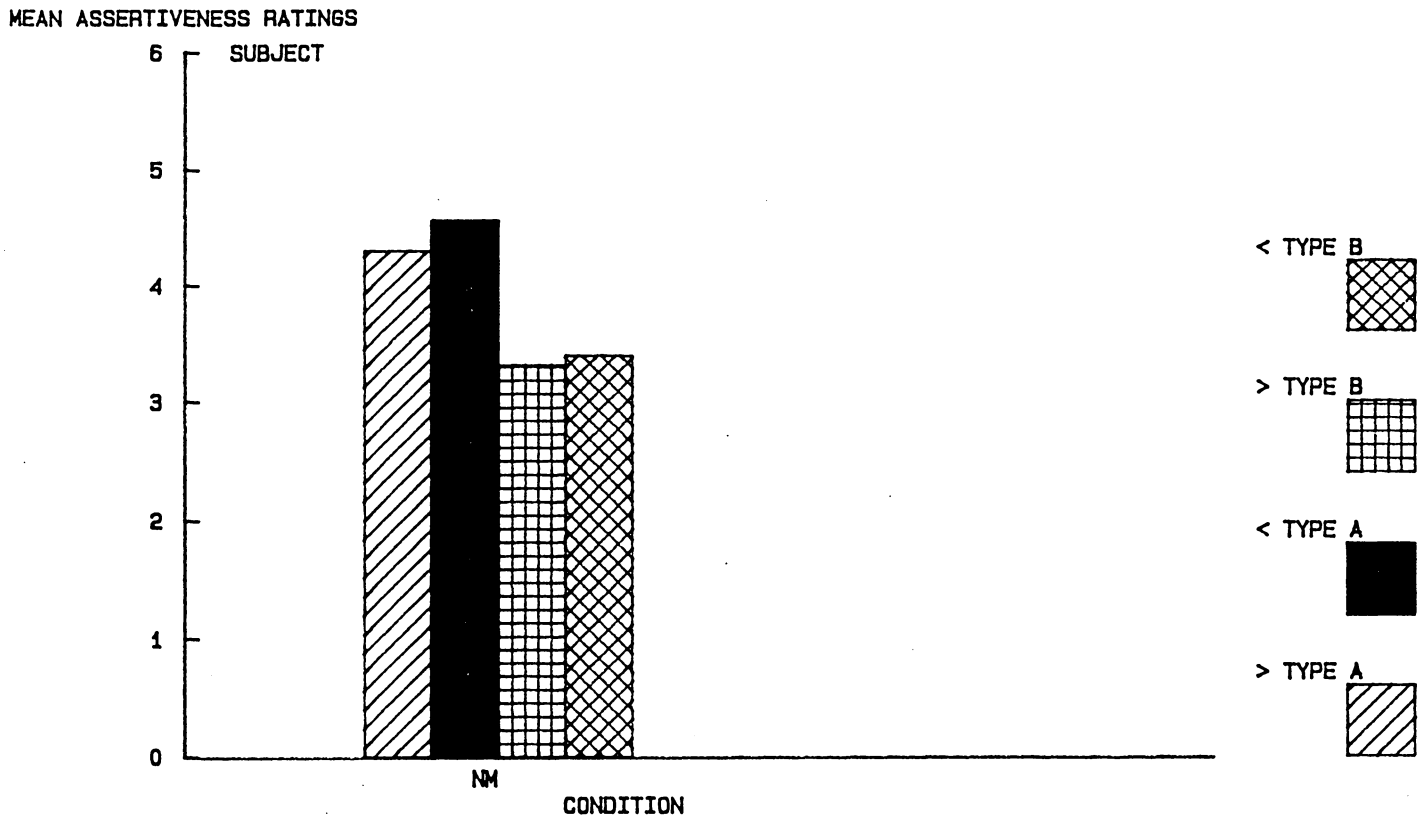

Figure 9. Significant differences among mean assertiveness ratings: Behavior Type/Anger-In.

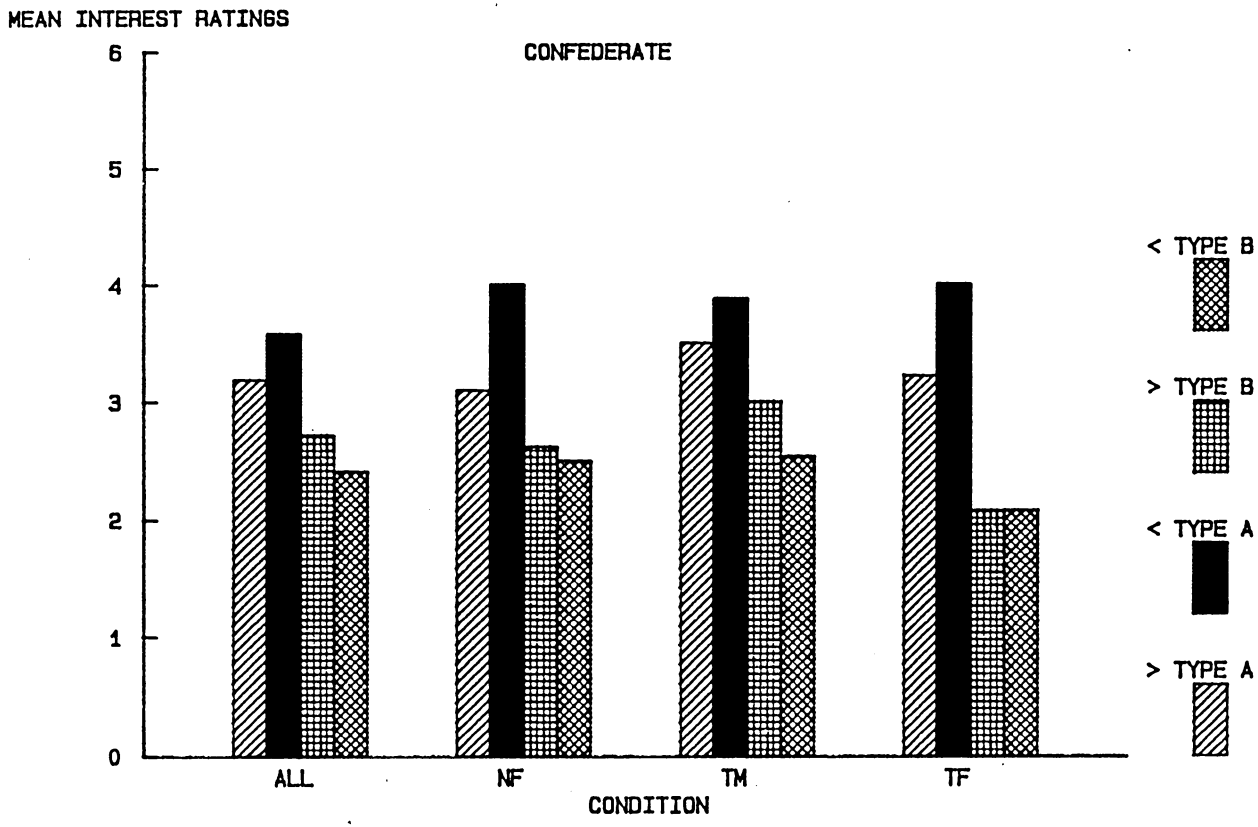

Figure 10. Significant differences among mean interest ratings: Behavior Type/Anger-In.

also produced the identical pattern. In this condition, the four groups obtained ratings of 3.50, 3.88, 3.00, and 2.54. The time-urgent condition with the female confederate produced similar findings. In addition, confederates were significantly more interested in interacting with low anger-in Type As than high anger-in Bs based on this manipulation. The four groups obtained ratings of 3.22, 4.00, 2.08, and 2.08 in this case.

In sum, Type As reporting a minimal tendency to hold anger in received the highest ratings of interpersonal competence in 100% of the six significant comparisons among groups.

Behavior Type/Anger-Out

The MANOVAs comparing Type As and Bs reporting differential tendencies toward overt anger expression were also nonsignificant. Three of the ANOVAs in this analysis revealed significant findings. See Table 9. The significant means are illustrated in Figures 11 and 12.

Figure 11 shows that observers rated high anger-out Type As as inappropriately expressing their anger to a significantly greater degree than low anger-out Bs across conditions. These two groups received respective ratings of 2.32 and 1.41. Nonangry Type As and angry Type Bs received respective

Table 9

ANOVAS: Behavior Type/Anger-Out by Condition

		F	
Dependent Measure	Rater	Main Effect	Interaction
Anxiety	OBS	.78	.68
	CON	.38	.92
	SUB	.25	.87
Anger	OBS	**4.19	**1.44
	CON	.77	1.18
	SUB	1.25	1.09
Assertiveness	OBS	.14	1.42
	CON	2.47	1.12
	SUB	.28	1.46
General Demeanor	OBS	.66	.73
	CON	2.04	1.40
	SUB	1.75	.81
Overall Social Skill	OBS	.15	1.14
	CON	2.26	.83
	SUB	1.86	.54
Interest	OBS	.07	.73
	CON	**4.92	.85
	SUB	*3.33	.68

*p<.05 **p<.01 ***p<.001 ****p<.0001

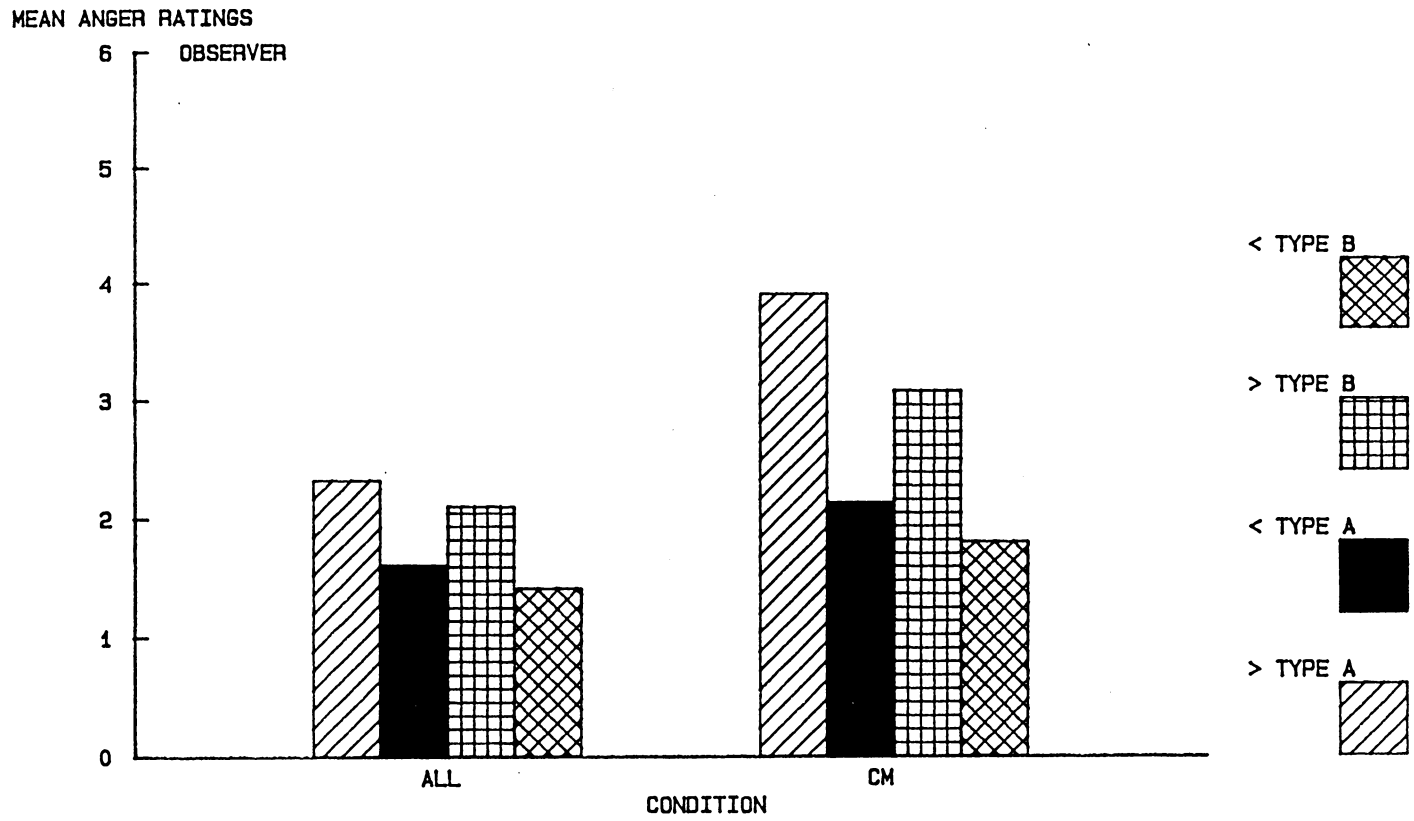

Figure 11. Significant differences among mean anger ratings: Behavior Type/Anger-Out.

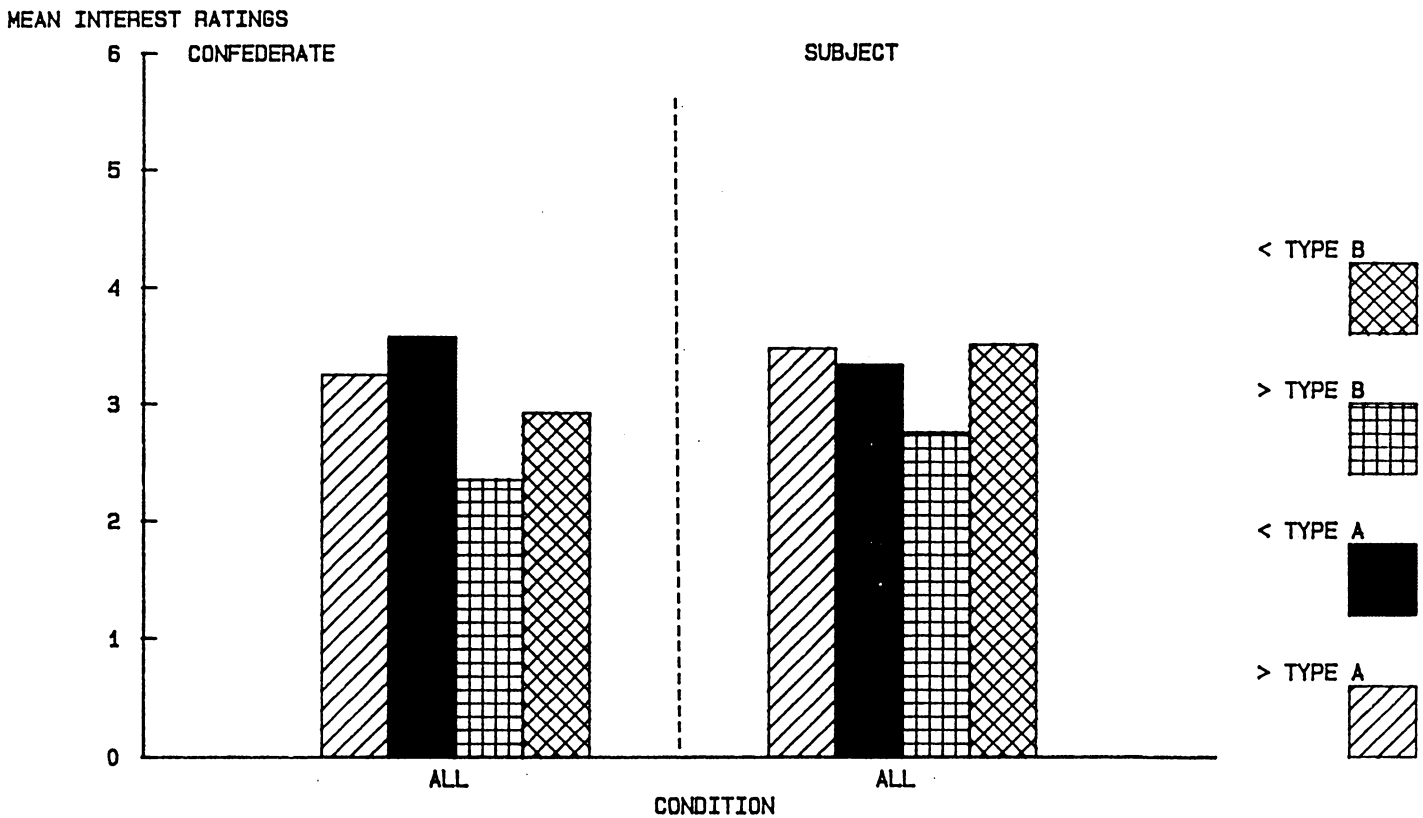

Figure 12. Significant differences among mean interest ratings: Behavior Type/Anger-Out.

nonsignificant ratings of 1.60 and 2.10 on this variable. In the challenging condition with a male confederate, observers rated both high anger-out Type As and Bs as inappropriately expressing their anger to a significantly greater degree than both low anger-out As and Bs. The angry groups obtained respective ratings of 3.90 and 3.07 while the nonangry groups obtained respective ratings of 2.13 and 1.80.

According to Figure 12, confederates were significantly more interested in interacting with both groups of Type As rather than Bs self-reporting a tendency toward anger expression. This was true regardless of condition. These groups obtained respective ratings of 3.25, 3.57, and 2.35. Nonangry Type Bs received a nonsignificant rating of 2.92 in this case. Figure 12 also indicates that Type Bs who are unlikely to express anger overtly perceived themselves as significantly more interesting than Type Bs who are apt to direct their anger toward others in the environment. These two groups achieved respective ratings of 2.75 and 3.50. Angry and nonangry Type As achieved respective nonsignificant ratings of 3.47 and 3.33.

Type As and Bs with a minimal tendency toward overt anger expression received more positive ratings in 38% (n=3) and 50% (n=4) of the eight significant

comparisons reported. Type As with high anger-out scores received more favorable ratings in 13% (n=1) of these comparisons. Specifically, confederates viewed these individuals as more interesting interactional partners across conditions than Bs also with high anger-out scores. This latter group never obtained significantly more favorable ratings than any of the three other groups.

Behavior Type/Total Anger

The MANOVAs examining differences among Type As and Bs with extreme total anger scores were nonsignificant as well. Two of the subsequent ANOVAs produced significant differences among the four groups. See Table 10. The significant means are depicted in Figures 13 and 14.

Figure 13 indicates that observers rated high total anger Type As as inappropriately expressing their anger to a significantly greater extent than all three of the remaining groups in the challenging condition with a male confederate. The four groups obtained ratings of 4.00, 2.44, 2.33, and 2.20 on this variable.

Figure 14 indicates that confederates were significantly more interested in interacting with nonangry Type As than angry Bs regardless of condition. These two groups received ratings of 3.58 and 2.72 respectively. Angry Type As and nonangry Type Bs

Table 10

ANOVAS: Behavior Type/Total Anger by Condition

		F	
Dependent Measure	Rater	Main Effect	Interaction
Anxiety	OBS	.48	1.47
	CON	1.13	.82
	SUB	.10	1.16
Anger	OBS	2.32	**2.08
	CON	1.52	.96
	SUB	.19	.91
Assertiveness	OBS	2.35	1.36
	CON	1.91	1.04
	SUB	2.32	1.12
General Demeanor	OBS	.90	.91
	CON	1.13	.80
	SUB	2.46	.81
Overall Social Skill	OBS	2.15	1.77
	CON	2.63	.63
	SUB	1.75	.64
Interest	OBS	.78	1.16
	CON	**3.76	.93
	SUB	2.47	.36

*p<.05 **p<.01 ***p<.001 ****p<.0001

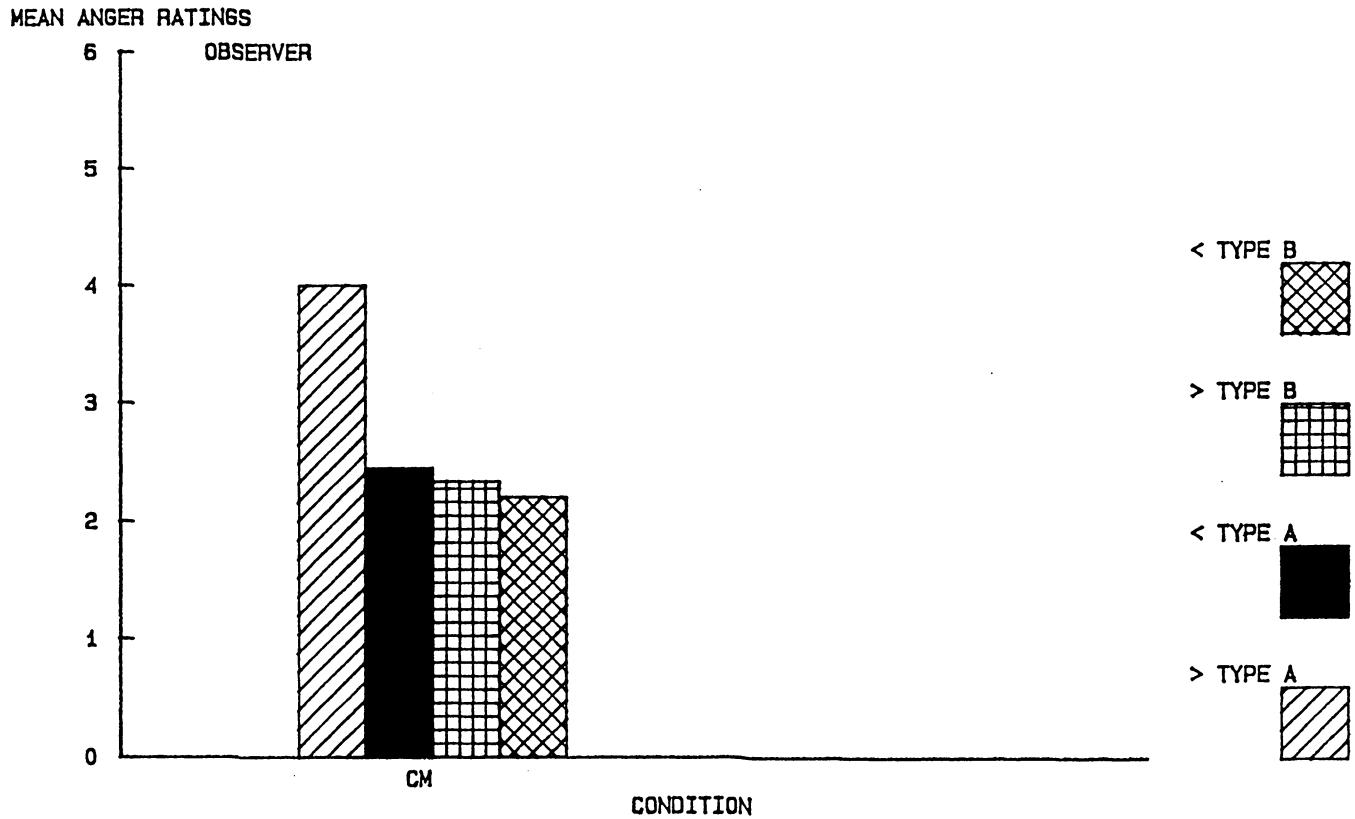

Figure 13. Significant differences among mean anger ratings: Behavior Type/Total Anger.

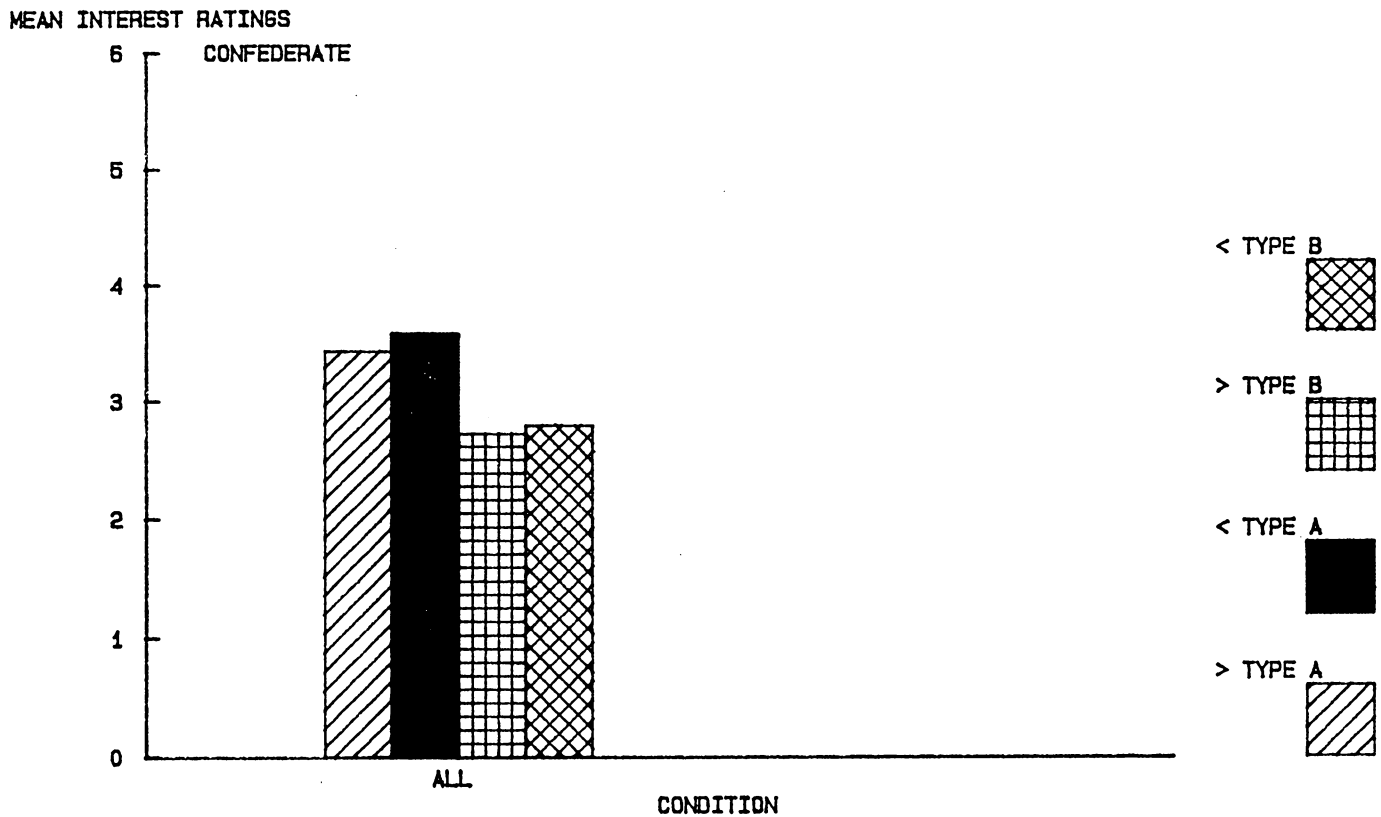

Figure 14. Significant differences among mean interest ratings: Behavior Type/Total Anger.

received respective nonsignificant ratings of 3.43 and 2.79 on the variable in question.

Nonangry Type As achieved more competent ratings in 50% (n=2) of the four significant comparisons reported. Both nonangry and angry Type Bs received a more favorable rating in 25% (n=1) of these cases. Angry Type Bs displayed their anger in a more appropriate fashion than angry As in the challenging interaction with the male confederate. Type As with high total anger scores never obtained a more favorable rating than any of the other groups.

Condition. Condition exerted a significant ($p<.05$) effect in each of the three MANOVAs and each of the 18 ANOVAs conducted to examine this variable. Observers, confederates, and subjects alike rated the six dimensions of interpersonal behavior differentlially depending on the experimental manipulation in place at the time.

General Summary

Behavior type. Type As received more favorable ratings than Bs in 60% (n=3) of five significant comparisons. They performed better according to the assertiveness, overall social skill, and interest variables, but more poorly on the anger variable especially in response to challenge.

Behavior type/MAI scales. The four sets of analyses based on all MAI scale classifications produced a total of 32 significant comparisons among groups. Type As with low MAI scale scores achieved the greatest percentage (53%; n=17) of significantly more competent ratings. Type Bs with low MAI scale scores obtained the next greatest percentage (37%; n=12) of significantly more favorable ratings. Type As and Bs with high MAI scale scores received the smallest percentages (6%; n=2 and 4%; n=1) of ratings significantly more favorable than those of other groups.

Condition. Sixty-seven percent (n=14) of 21 ANOVAs resulted in significant main effects for behavior type or behavior type/MAI classification. The remaining 33% (n=7) revealed significant interactions between these variables and condition.

Thirty-six percent (n=4) of 11 significant interaction mean differences involved the challenging conditon. In all of these cases, inappropriate anger expression was the dependent measure affected. Another 36% (n=4) of the significant interaction mean differences involved the nonchallenging conditon. Assertiveness and interest were the variables affected here. The time-urgent condition was involved in the remaining 28% (n=3) of the significant interaction mean

differences. Again, assertiveness and interest were the dependent variables affected.

Confederate sex. Seventy-two percent (n=8) of the 11 significant interaction mean differences involved a male confederate while 28% (n=3) involved a female confederate. Inappropriate anger expression, interest, and assertiveness were affected by the presence of a male confederate. Only the former two of these variables were affected by interaction with a female confederate.

Discussion

Reliability and Validity of Experimental Findings

The current study empirically addressed reliability and validity issues associated with the measurements and manipulations employed. These data suggest that the experimental findings may be interpreted within the context of Type A research.

Moderate to strong correlations were found between ratings from the two observers. The correlation for interest was relatively weaker than the other ratings perhaps since this variable was more a matter of personal opinion than an objectively defined construct. Given the overall strength of the associations, results from the subsequent analyses are interpretable based on interobserver correlational data.

All correlations between observer and confederate ratings were highly significant. Both groups apparently succeeded in attending to relevant subject behaviors and in using the same definitions to evaluate subject performance. Despite such concordance, a greater number of significant differences appeared within the confederate data set. Subjects' remarks were directed personally toward the confederates rather than the observers who viewed the interactions from a distance. This face to face contact may explain the greater variability in confederate ratings. For

instance, the confederate who is told that he, himself, "must be hard up for a date" may assign a higher anger rating to that subject than the observer whose own attractiveness is not challenged. Confederates were also in a position to view more subtle behavioral cues emitted by subjects than observers. The angle and the clarity of the videotaped records may have prevented observers from having access to such information.

All correlations between confederate and subject ratings were significant. Thus, these two groups perceived the interactions similary although subjects never had access to the rating manuals defining each Likert scale item. Correlations between observer and subject ratings were significant only for inappropriate anger expression, general demeanor, and interest. The absence of rating manuals with similar definitions may explain why correlations between subject and both confederate and observer data sets were less significant than correlations between the observer and confederate sets. Many subjects asked confederates to define the term, assertiveness, while filling out their rating forms. Although confederates provided the definition listed in the manual, other subjects may have been equally confused, but too nonassertive to ask for clarification. Another possible explanation is that subjects may have based their ratings on internal

states rather than overt behavior which confederates and observers relied on for their ratings. Yet another possibility for the discrepancy between observer/confederate and subject ratings is social desirability. Subjects may have perceived their behavior in a manner similar to observers and confederates, but may have been reluctant to acknowledge social inadequacy on paper. Another possibility is that subjects actually perceived themselves differently than observers. If this is indeed the case, appropriate interventions might include cognitive restructuring so that subjects may learn to recognize behavioral assets and/or deficits and change these responses accordingly. For instance, some subjects may mistake assertively standing up for one's rights as an aggressive response, viewing passive compliance with other's opinions as the most appropriate option.

The exact nature of these differences might be explored in future research. In the present study, they suggest some caution in interpreting findings, particularly those based on subject ratings. Despite less than impressive correlations among data sets, the pattern of results from the experimental analyses was quite consistent. That is, nonangry Type As and Bs

received more favorable ratings than angry Type As and Bs regardless of the source of the ratings.

The order in which experimental manipulations were presented (i.e. condition and confederate sex) had no significant effect on the primary findings. However, the two male and the two female confederates rated subjects in a significantly different fashion. Also, subjects rated themselves differentially in response to the two female confederates.

Two possible explanations exist for these findings. First, the confederates could have behaved in a dissimilar enough fashion to produce significantly different reactions in subjects. While observers always correctly identified the experimental condition being implemented, their judgements were based primarily on content of confederates' speech rather than confederates' affect. Relatedly, observers made informal comments that the two male and the two female confederates had somewhat different styles of provoking subjects. For instance, one male confederate laughed at subjects' comments in the challenging condition, while the other more often stared at subjects in silence. The second potential explanation for these findings is that subjects behaved similarly in the presence of both confederates, but the two confederates' rating criteria varied to the extent that

significant differences emerged. Conceivably, both explanations may have contributed to these results.

In future work, a greater effort might be made to train conferates to behave in a more consistent manner with experimental manipulation checks based on more stringent criteria. Additionally, interconfederate reliability might be trained and formally evaluated in future studies of this type.

The interconfederate differences in the present study do not invalidate the significant effects obtained in response to the condition and behavior type (behavior type/MAI scale) variables. In fact, a greater number of significant findings may have resulted from the experimental variables if interconfederate differences were not a factor.

Despite strong extraneous variable effects as well as the small number of subjects in each experimental group after MAI classification, a number of signficant findings emerged from the series of ANOVAs which were conducted. However, the fact that none of the MANOVAs (calculated to account for chance significane when making a great number of comparisons) were significant must not be overlooked. At least within the Type A/B breakdown based on the hostility scale of the MAI, a greater number of significant findings appeared than one would expect by chance. The significant ANOVAs and

HSD tests within the remaining three MAI breakdowns produced a similar pattern of results as those associated with the hostility scale. Furthermore, the nonsignificant differences clearly evidenced the same pattern. Given this information, the results of this study may be interpreted in relation to theoretical constructs such as Type A behavior, anger, and interpersonal skill but with proper caution exercised where noted.

Interpretation of Experimental Findings

The initial analyses revealed that Type As were more assertive, had greater overall social skill, and made more interesting conversational partners than Bs despite the type of interaction. However, in challenging situations, Type As expressed anger in a less desirable fashion than Bs. Thus, the original hypothesis suggesting that interpersonal skill deficits are prominent among this population was just partially supported. In fact, Type As behaved in a more socially skilled manner compared to Bs much of the time.

Classification of Type As and Bs according to degree of self-reported anger helped clarify the relationship between interpersonal effectivenesss and the TABP. As hypothesized, angry individuals appeared less skilled than nonangry persons regardless of behavior type.

Contrary to implications of previous research, these skill deficits were evident under nonchallenging as well as challenging conditions. Furthermore, the time-urgent situation failed to produce significant amounts of aggression among Type As in general or among angry individuals regardless of behavior type. As expected, skill deficits were more evident in the presence of male versus female confederates.

The current findings are important in terms of the Type A construct's clinical significance. They also have implications for assessment of individuals at risk for CVD and for modification of coronary-prone behaviors.

Clinical significance. The results of this study support Friedman, et. al.'s contention that aggressive responses do not necessarily coincide with the job-involved, fast-paced aspects of the TABP. According to rating scale responses, a subset of Type As appeared friendly and socially skilled while a subset of Bs appeared hostile and unskilled. Traditional notions were also supported in that some Type As were hostile and socially unskilled while some Bs were friendly and adept. Informal observation of videotapes following analysis helped to illustrate these statistical findings.

Nonangry Type As seemed to initiate conversations, ask questions of the confederate, discuss topics with enthusiasm, and assertively respond to challenges. Angry Type As tended to dominate conversations and respond to challenges in a loud, aggressive fashion. Although nonangry Type Bs were rated more positively than angry As, their calm, quiet manner seemed to make them less interesting conversationalists than the nonangry As. These Type Bs appeared to initiate and maintain conversations with more difficulty than the nonangry As and appeared less animated during the course of discussions. Angy Type Bs were the least skilled of all groups. These individuals not only failed to participate in conversations, but responded to challenge by refusing to speak or by using sarcasm to indirectly insult confederates.

The present findings, themselves, simply suggest that the Type A and B classifications fail to describe two homogeneous groups of people. Instead, persons within these groups differ with respect to anger level and adequacy of interpersonal expression. However, given recent studies associating anger with CVD (Barefoot, et. al., 1983; Dembroski, et. al., 1985; Haynes, et. al., 1980; MacDougall, et. al., 1985; Williams, et. al., 1980), the current findings indirectly suggest that interpersonaly unskilled

individuals may experience greater risk of developing cardiovascular problems. Furthermore, Type As and Bs alike may be at increased risk depending on level of anger and interpersonal effectiveness. Research assessing interpersonal skill in conjunction with physiological reactivity or CVD itself is necessary to verify this conjecture.

The mechanisms by which interpersonal inadequcay affects physical health might be examined as well. For instance, through their abrasive interpersonal style, angry persons may consistently create the challenging situations which are associated with unhealthy cardiovascular hyperreactivity. A transactional cycle may develop in which persons who fail to affect peers favorably become more likely to encounter negative reactions. These negative reactions may exaccerbate the original undesirable expresion of anger which then leads to additional peer provocation and physiological hyperreactivity.

Another possibility is that interpersonally unskilled people may fail to develop social support systems. Berkman and Syme (1979) describe a relationship between lack of social support, stress symptoms, and early mortality. Cobb (1976) also presents evidence that supportive interactions protect people from the health consequences of stress. In the

current study, angry persons were unable to engage in reciprocally rewarding interactions even in the absence of challenge. If behavior in the experimental situations truly reflects daily responding, angry Type A and Bs appear unlikely to develop strong social support networks. This finding is consistent with Smith and Frohm's (1985) recent work linking hostility as measured by the MMPI hostility scale with minimal social support. An earlier study (Waldron, Hickey, McPherson, Butensky, Gruss, Overall, Schmade, & Wohlmuth, 1980) showed that Type A college students reported fewer or less satisfactory social relationships (with both sexes) and more feelings of lonliness than Type B students. Based on a review of contemporary Type A literature, Matthews (1986) agrees that hostility in the absence of challenge may indeed affect the quality of an individual's interpersonal relations and subsequent health status.

Data from this particular study do not directly suggest a relationship between the interpersonal manifestation of anger and CVD. However, when considered in the context of findings from other recent investigations which have included assessment of disease parameters, they support the need for research directly examining health risk and its relationship to interpersonal skill. Several tentative contentions

may, however, be made based on these and other recent Type A findings. The heterogeneous TABP seems to include responses unrelated to CVD development. Apparently, some Type As fail to report or demonstrate aggressive qualities while some Type Bs think and behave in this fashion. Such characteristics may place these Type Bs at risk for CVD along with the aggressive subgroup of Type As. The present results also indicate that interpersonal challenge is not necessary to produce interpersonal skill deficits among angry Type As or Bs. Individuals reporting a substantial degree of anger behave in a hostile manner even when the environment is nonprovocative. Given these findings, interchangable use of the terms Type A and coronray-prone may no longer be appropriate. This reconceptualization of the Type A construct presents implications for past and future means of assessing coronary-prone behavior.

Assessment implications. Contemporary studies have revealed considerable variability among Type A measures with each device emphsizing a different aspect of the broad, overall pattern (Byrne, Rosenman, Schuler, & Chesney, 1985 Smith and O'Keeffe, 1985). This inconsistency renders conclusions based on cross-study comparisons tentative at best. Perhaps even more problematic is that of all the components

addressed, the pattern's aggressive aspects are largely overlooked by available assessment devices. This is a major shortcoming based on data from the current study as well as data identifying anger as a CVD risk factor independent of and more powerful than the TABP itself (Haynes, et. al., 1980; Williams, et. al., 1980).

The Structured Interview Type A classification seems to be based primarily on responses reflecting time-urgent and job-invovled aspects of the pattern. According to Rosenman (1978), these responses include expression of energy, alertness, and confidence as well as firm handshake, vigorous voice, and animated gestures. Such behaviors do not necessarily depict an angry individual. In fact, these responses are indicative of someone with good interpersonal skill. The Type B behavior pattern, according to Rosenman, includes lengthy, rambling responses and minimum inflection in general speech (almost a monotone). These responses are indicative of someone with relatively poor interpersonal skill.

Recent investigations have revealed that the Jenkins Activity Survey, like the Structured Interview, measures a heterogeneous assortment of characteristics. This device also fails to assess the TABP's anger component to any substantial degree. In fact, Jenkins Activity Survey Type A scores have been found to

reflect positive psychosocial adjustment (Hansson, Hogan, Johnson, & Schroeder, 1983; Vickers, Hervig, Rahe, and Rosenman, 1981; Wadden, Anderton, Foster, & Love, 1983).

Thus far, data from this study point to two major problems with current methods of assessing so called coronary prone behavior. First, available Type A measures neglect the pattern's aggressive aspects which appear to discriminate individuals truly at risk for CVD. Secondly, the literature surrounding existing measures has traditionally implied that Type As experience poor psychosocial adjustment in addition to increased health risk. As indicated above, this too is not necessarily the case. In fact, Type A classifications often seem to be associated with socially skilled, well-adjusted individuals. Concurrently, Type Bs classifications often appear to be associated with psychosocially distressed individuals who behave in a unskilled fashion. These problems are interrelated in that social skill deficits may contribute to somatic disease by the mechanisms previously described (e.g. lack of social support).

Given these shortcomings, researchers might concentrate on developing reliable, valid measures of anger rather than continuing to use multicharacteristic measures that misclassify individuals on the basis of

both health risk and psychosocial adjustment. Component scoring of the Structured Interview represents a promising step in the right direction. The present results suggest that investigators attend to interviewer sex differences if the Structured Interview remains a part of Type A assessment. Differential responding to male versus female interviewers has not been addressed in an empirical manner to date.

If anger becomes the focus of Type A assessment, several points should be noted. Siegel (1984) states that anger itself is a multifaceted phenomenon. Therefore, assessment of this construct is not as simple as it may initially appear. One important consideration in developing adequate means of assessment is the distinction between anger arousal and anger expression. Anger arousal seems largely related to individuals' cognitive interpretations. According to some researchers (e.g. Meichenbaum, 1977), differential beliefs about a situation can lead one person to experience anger and another to remain calm in response to this same event. Measures of hostility primarily seem to tap into the cognitive aspects of anger. For instance, the MMPI hostility scale contains items such as "I commonly wonder what hidden reason another person may have for doing something nice for

me" and "I have frequently worked under people who seem to have things arranged so that they get credit for good works but are able to pass off mistakes onto those under them". Individuals harboring such beliefs are probably more likely to become angry in response to interpersonal challenge than persons who feel that people can be kind and generous for no personal gain and that supervisors are generally fair in their evaluation and treatment. In the current study, the MAI hostility scale discriminated among interpersonally skilled and unskilled individuals much more often than any of the other scales. Hostility has also been related to the actual presence of CVD (e.g. Williams, et. al., 1980) and to lack of social support (Smith & Frohm, 1985). Thus, the cognitive characteristics of anger seem variables worthy of continued study in the area of cardiovascular health and disease.

Anger expression refers to behavioral strategies for handling situations once arousal occurs. Researchers in the area have often distinguished between anger-in versus anger-out modes of responding. Social skill researchers (e.g. Phelps & Austin, 1975) more commonly refer to these styles as passive (passive-aggressive) versus aggressive. Characteristic behaviors range from enduring anger in silence to indirect aggression (e.g. sarcasm or noncompliance) to

direct aggression (e.g. swearing or physical violence). Investigators view assertiveness (i.e. expressing feelings and beliefs in direct, honest ways which do not violate others' rights) as an appropriate alternative to these other means of responding to anger arousal. In the current study, both anger-in and anger-out MAI scales successfully discriminated skilled from nonskilled individuals. Researchers have also related both factors to CVD or hyperreactivity (e.g. Haynes, et. al., 1980; Siegel, 1983). Therefore, form of expression appears to be an aspect worthy of future investigation toward the prevention of CVD. Until now, anger expression has been studied exclusively via a self-report format in the area of Type A. Behavioral assessment techniques such as those employed here offer a relatively more objective, reliable means of observing subjects' responding in representative situations which can facilitate modification of problematic forms of expression.

Treatment implications. The present findings suggest that only a certain subset of Type As, those with a propensity for anger, are in need of intervention. This intervention might be directed toward reducing anger arousal and training behavioral skills. Such treatment would improve interpersonal functioning and possibly minimize the adverse physical

consequences of interpersonal stress. Type As who experience minimal anger seem healthy in both a psychological and physical sense. Therefore, modification of their behavior appears unnecessary. Contrary to traditional thinking in the area, Type B behavior appears to be an inappropriate treatment goal according to the present findings since Type Bs appear to be generally less skilled than As. Furthermore, some Type Bs experience significant amounts of anger. Like angry Type As, these persons may also require intervention to improve interpersonal and physical functioning. Type Bs who experience minimal anger seem somewhat less socially adept than nonangry As, but not to an extent that necessitates clinical intervention.

Based on the current data, interpersonal skills training consisting of modeling, behavioral rehearsal, feedback, and reinforcement (Eisler & Frederiksen, 1980) appears to be a viable form of intervention for angry Type As and Bs. While Thurman (1985) found no significant advantage in adding this type of treatment to cognitive therapy, his dependent measures were insensitive to overt behavioral changes. Based on the present findings, therapies comprised of anxiety reduction techniques appear unwarranted since none of the analyses performed in this study produced significant group differences on this variable.

Given that interpersonal skills training is a reasonable treatment with the population at hand, one target might involve anger expression in response to challenging situations. Angry individuals were unskilled in these situations in that they either expressed negative emotions overtly in a manner which violated the confederate's rights, they subtly insulted the confederate again violating his/her rights, or they refused to respond at all. Assertive expression of anger represents a suitable alternative for such maladaptive modes of responding. In this study, the time-urgent condition failed to produce differential responding among groups on the dependent anger variable. As such, time-urgent situations may not constitute the most useful stimulus condition for treating inappropriate anger expression. However, angry individuals were less assertive when confederates hindered their progress on a task. Thus, assertion training in nonprovocative situations may be appropriate. Another potential target for therapy is general conversational behavior in nonchallenging situations. Angry individuals failed to initiate and maintain conversations in which confederates were agreeable and complimentary.

Targeting overt behaviors for change does not necessarily rule out the need to modify cognitive

responses as well. Angry individuals in this study may have had the appropriate interpersonal skills in their repertoire, but chosen not to use them as a function of cognitions surrounding the situation. The fact that subjects were less likely to display skill deficits in the presence of female versus male confederates suggests that this may be the case. For instance, subjects may have felt a greater need to appear polite and socially appropriate when interacting with a woman, so in these instances, they invoked the behavioral skills available in their repertoire. Eisler and Frederiksen (1980) contend that beliefs about displaying certain behaviors, expectations regarding consequences of behavior, and perceptions of a partner's intentions and motivations may facilitate or inhibit the performance of socially skilled behavior. In this population, hostile individuals with beliefs such as "other people are only out for themselves" may see no need to behave courteously toward peers even though they have the ability to do so.

This particular study did not specifically address the relationship of overt and cognitive responding. Future investigations might examine this issue in a more formal manner in order to plan the most efficacious treatment for the popualtion in question. Since the primary purpose of investigating the TABP is

to design ways of reducing cardiovascular risk, future research should include concomitant investigation of the physiological response system.

Cognitive-behavioral interpersonal skills training has a strong record of reducing aggression among a variety of populations (e.g. Foy, Eisler, & Pinkston, 1975; Frederiksen, Jenkins, Foy, & Eisler, 1976; Rimm, Hill, Brown, & Stuart, 1974). However, concurrent reduction in potentially harmful cardiovascular hyperreactivity or actual incidene of disease has yet to be shown. If such effects can be demonstrated, interpersonal skills training may develop a new popularity within the field of behavioral medicine.

Conclusions

Behavioral assessment methods succeeded in revealing interpersonal skill differences among Type As and Bs. In response to challenge, Type As expressed anger inappropriately more so than Bs. However, when unprovoked, Type As were generally more skilled. Classification of Type As and Bs according to degree of self-reported anger revealed that angry individuals, regardless of behavior type, were less skilled than nonangry individuals. This pattern of results was evident across challenging, nonchallenging, and time-urgent conditions.

These findings imply that the TABP is a heterogeneous construct comprised of both adaptive and maladaptive qualities as is the response style of Type Bs. In this study, the pattern's anger component discriminated among skilled and unskilled individuals. In other studies, the anger component has been linked to CVD parameters. The relationship between interpersonal skill and somatic disease is yet unclear. Nevertheless, aggression may be synomymous with coronary-prone and socially unskilled behavior more so than general Type A responding. This contention implies that some Type Bs may also be at increased risk for CVD.

Type A measures have been designed to assess the broad behavior patten. As such, they neglect to tap the pattern's angry components. The current findings suggest that future assessment in the area might focus on both arousal (cognitive) and expression (behavioral) aspects of anger. Concurrent examination of physiological responding or disease states might demonstrate the predictive value of focusing assessment efforts on these variables.

Interpersonal skills training appears to be a viable treatment option for Type As and Bs reporting a relatively high level of anger. Subjects in this study demonstrated inappropriate behavioral responses.

However, they may have had adequate skills in their repertoires, but failed to perform them due to maladaptive intervening cognitions. Therefore, both cognitive and behavioral variables may require modification with outcomes measured in terms of cognitive, behavioral, and physiological responding.

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Appendix A

Consent Form

College Student Thought/Behavior Survey

The purpose of this study is to examine the ways in which college students think about and deal with their environment (school, other people, etc.). To do this, we will be giving you a number of self-report questionnaires.

All information is confidential and will be seen only by the experimenters, so please answer honestly and accurately. Each questionnaire has a code number at the top so that your name will not be associated with your responses on any of the measures. However, we do ask for your name, student ID#, and phone # on the consent form. We ask for this information because later in the quarter, certain individuals may be contacted to participate in other experiments based on their responses to these questionnaires. However, completing the questionnaires right now in no way obligates you to participate in the later experiments.

This testing session will last approximately 2 hours. You will receive 2 extra credit points in Introductory Psychology for completing these measures. You may discontinue your participation in the study at any time without penalty; however, you will not receive the extra credit points unless you complete the study.

This research project has been approved by the Human Subjects Research Committee. Any questions you might have should be directed to:

Patti Lou Watkins

Graduate Research Assistant

Clay Ward

Graduate Research Assistant

Dr. Richard M. Eisler

Principal Investigator

Dr. William Schicht

Chair, Human Subjects Research Committee

I hereby understand the conditions outlined above and agree to voluntarily participate in this research project under these conditions.

Subject's Name: _____

Subject's Phone #: _____

Subject's Student ID#: _____

Subject's Signature: _____

Experimenter's Signature: _____

Appendix B

Consent Form

Lifestyle Interview

In this interview, you will be asked a number of questions concerning your habits, pace of activities, and general lifestyle. None of the questions are designed to embarrass you. Your responses will be audiotaped for subsequent evaluation following which, the tape will be erased. You will be identified only by a code # on the tape to ensure your confidentiality. Your interview will be heard only by the experimenter(s), again to maintain your confidentiality.

This interview will last approximately 15-20 minutes and you will be awarded one extra-credit point in Introductory Psychology for your participation. You may discontinue the interview at any time without penalty; however, you will receive no points in this case. The purpose of this interview is to determine eligibility for involvement in a subsequent study assessing college students' reactions to a number of typically encountered situations. While you are not obligated to participate in the second study, we would very much appreciate your help. Thank You.

I understand the conditions stated above and voluntarily agree to participate in this interview under these conditions.

Subject's Signature: _____

Subject's Name: _____

Subject's Student ID#: _____

Subject's Phone #: _____

Patti Lou Watkins _____

Graduate Research Assistant

Richard M. Eisler, Ph.D.

Principal Investigator

William Schicht, Ph.D.

Chair, Human Subjects Research Committee

Appendix C

Consent Form

Typical Encounters

In this study, you will be asked to behave as you usually do in response to a variety of situations typically encountered by college students. The person you will interact with is a confederate working with us. Although these are role-play rather than actual situations, we stress that you behave as naturally as possible. None of your responses are right or wrong--the best thing you can do is to be yourself! Another part of this study involves working on a logic puzzle as we are also interested in the way college students think and solve problems. Following the procedures, the purpose of this and the previous two studies will be explained in full.

We will be videotaping the role-play you participate in today since it is difficult to accurately observe all of your behavior immediately as it occurs. The tapes will be erased within the next few weeks following evaluation. Only members of the research team will view your responses. As always, the information you present us will be kept strictly confidential.

The procedures today should last about half an hour and you will receive one extra credit point in

Introductory Psychology for your participation. You may discontinue the experiment at any time without penalty; however, you will not receive a point in this case.

I understand the conditions stated above and voluntarily agree to participate in the study under these conditions.

Subject's Signature: _____

Subject's Name: _____

Subject's Student ID#: _____

Subject's Phone #: _____

Patti Lou Watkins _____

Graduate Research Assistant

Dr. Richard M. Eisler

Principal Investigator

Dr. William Schicht

Chair, Human Subjects Committee

Appendix D

Multidimensional Anger Inventory

Directions: A number of statements that people have used to describe themselves are given below. Indicate how descriptive each statement has been of you during the past two weeks. For example, if statement number one describes you very well for this time period, circle "5".

not at all		moderately		extremely
1	2	3	4	5

1.	I tend to get angry more frequently than most people.	1 2 3 4 5
2.	I get angry when someone lets me down.	1 2 3 4 5
3.	I harbor grudges that I don't tell anyone about.	1 2 3 4 5
4.	I try to get even when I'm angry with someone.	1 2 3 4 5
5.	I get angry when people are unfair.	1 2 3 4 5
6.	I am secretly quite critical of others.	1 2 3 4 5
7.	It is easy to make me angry.	1 2 3 4 5
8.	I get angry when something blocks my plans.	1 2 3 4 5
9.	When I am angry with someone, I let that person know.	1 2 3 4 5
10.	I have met many people who are supposed	

	to be experts who are no better than I.	1 2 3 4 5
11.	I get angry when I am delayed.	1 2 3 4 5
12.	Something makes me angry almost every day.	1 2 3 4 5
13.	Other people seem to get angrier than I do in similar circumstances.	1 2 3 4 5
14.	I get angry when someone embarrasses me.	1 2 3 4 5
15.	I often feel angrier than I think I should.	1 2 3 4 5
16.	I feel guilty about expressing my anger.	1 2 3 4 5
17.	I get angry when I have to take orders from someone less capable than I.	1 2 3 4 5
18.	When I am angry with someone, I take it out on whoever is around.	1 2 3 4 5
19.	Some of my friends have habits that annoy and bother me very much.	1 2 3 4 5
20.	I get angry when I have to work with incompetent people.	1 2 3 4 5
21.	I am surprised at how often I feel angry.	1 2 3 4 5
22.	Once I let people know I'm angry, I can put it out of my mind.	1 2 3 4 5
23.	I get angry when I do something stupid.	1 2 3 4 5
24.	People talk about me behind my back.	1 2 3 4 5
25.	At times, I feel angry for no specific reason.	1 2 3 4 5

26. I get angry when I am not given credit for something that I have done. 1 2 3 4 5

27. I can make myself angry about something in the past just by thinking about it. 1 2 3 4 5

28. Even after I have expressed my anger, I have trouble forgetting about it. 1 2 3 4 5

29. When I hide my anger from others, I think about it for a long time. 1 2 3 4 5

30. I get so angry I feel like I might lose control. 1 2 3 4 5

31. People can bother me just by being around. 1 2 3 4 5

32. When I get angry, I stay angry for hours. 1 2 3 4 5

33. If I let people see the way I feel, I'd be considered a hard person to get along with. 1 2 3 4 5

34. When I hide my anger from others, I forget about it pretty quickly. 1 2 3 4 5

35. I am on my guard with people who are friendlier than I expected. 1 2 3 4 5

36. I try to talk over problems with people without letting them know I am angry. 1 2 3 4 5

37. It's difficult for me to let people know I'm angry. 1 2 3 4 5

38. When I get angry, I calm down faster

than most people. 1 2 3 4 5

Appendix E

Behavior Pattern Interview

(Student Version)

INTRODUCTION: "I would appreciate it if you would answer the following questions to the best of your ability. Your answers will be kept in the strictest confidence. Most of the questions are concerned with your superficial habits and none of them will embarrass you". (Begin taping now).

Your code number is _____.

1.) May I ask your age? (What year are you in?)

2.) Why did you sign up for this particular study?

3.) What is your major area of study?

   a.) Why did you select this major?

   b.) What did you expect to major in?

4.) Are you satisfied with your class performance, grade-wise? (Why not?).

5.) Is your coursework very demanding?

   a.) Is there any time when you feel particularly rushed or under pressure?

   b.) When you are under pressure, does it bother you?

6.) Would you describe yourself as hard-driving and ambitious in accomplishing the things you want, getting things done as quickly as possible, or would you describe yourself as relatively relaxed

and easy-going?

a.) Do you have a boyfriend or girlfriend who knows you well?

b.) How would they describe you--as hard-driving and ambitious or as relaxed and easy-going?

c.) Has she (he) ever asked you to slow down in your work? Never? How would she (he) put it in her own words?

7.) When you get angry or upset, do people around you know about it? How do you show it? Would you change the expression on your face? Would you slam your fist on the table? Would you swear?

a.) How often do you get angry?

b.) What kinds of things make you angry?

8.) Do you think you drive harder to accomplish things than most other students?

9.) Do you complete homework assignments well before they are due? (How often?).

10. Have you ever had the opportunity to play competitive games with children around the ages of six and eight? Like cards, checkers, or monopoly?

a.) Did you always allow them to win on purpose?

b.) Why? (or why not?).

c.) Do you think children should be taught to be competitive?

11.) When you play games with people your own age, do you play for the fun of it, or are you in there to win?

a.) What happens if you lose?

12.) Do you compete with your classmates for grades? Do you enjoy this? (Do you wish there were competition?).

a.) Are you competitive out of class--in sports for example?

13.) Do you drive? Suppose someone in your lane is going far too slowly for you, what would you do about it? Would you mutter and complain to yourself, honk your horn, flash your lights? Would anyone riding with you know that you were annoyed.

14.) Most people who go to school have to get up fairly early in the morning--in your particular case, what time do you ordinarily like to get up?

15.) If you make an appointment with someone for, oh, two o'clock in the afternoon, for example, would you be there on time?

a.) If you are kept waiting, do you resent it?

b.) Would you say anything about it?

16.) If you see someone doing a task rather slowly and you know that you could do it faster and better yourself, does it make you restless to watch?

a.) Would you be tempted to step in and do it yourself? Would you actually do this?

17.) What iritates you most about this college or the students here?

18.) Do you eat rapidly? Do you walk rapidly? After you've finished eating, do you like to sit around the table and chat, or do you like to get up and get going?

19.) When you go out to a restaurant and you find eight or ten people waiting ahead of you for a table, would you wait? What would you do while you were waiting?

20.) How do you feel about waiting in lines--registration lines, bank lines, supermarket lines, ...?

21.) Do you always feel anxious to get going and finish whatever you have to do?

22.) Do you have the feeling that time is passing too rapidly for you to accomplish all the things you'd like to get done in one day?

a.) Do you often feel a sense of time-urgency?

23.) Do you hurry in doing most things? What things do you hurry through?

Alright, that completes the interview. Thank you very much.

Appendix F

Challenging Role Play Situations

College Major

CONFEDERATE: Pause 5 seconds waiting for subject to begin interaction.

If subject initiates (asks what your major is)...

CONFEDERATE: Foreign Languages, what's yours?

If subject does not initiate...

CONFEDERATE: So, what's your major?

When subject responds...

CONFEDERATE: (If major declared) What a joke!

CONFEDERATE: (If major undeclared) Undecided? That's funny!

CONFEDERATE: Pause 5 seconds for subject to begin interaction.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: (If major declared) You really don't have to be very bright to major in that, do you?

CONFEDERATE: (If major undeclared) Indecision? Sounds like you might not be good at anything you try.

CONFEDERATE: Pause 5 seconds for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: (If major declared) You probably won't get a good job with your major.

CONFEDERATE: (If major undeclared) You'll never get a job if you don't have a major.

CONFEDERATE: Pause 5 seconds for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: Pause until the end of 1 minute.

<u>Dating</u>

CONFEDERATE: Pause 5 seconds waiting for subject to begin interaction.

If subject initiates (asks if you are dating)...

CONFEDERATE: Yes, how about you?

If subject does not initiate...

CONFEDERATE: So, are you dating anyone?

When subject responds...

CONFEDERATE: (If yes) Too bad---your grades are going to go down hill fast!

CONFEDERATE: (If no) There must be something wrong with you that you're not going out!

CONFEDERATE: Pause 5 seconds for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) Your girlfriend must be kind of hard up to go out with you.

CONFEDERATE: (If no)...If you're not going out with anyone yet, you'll probably never find anyone.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) Enjoy going out now, it probably won't last!

CONFEDERATE: (If no) Good luck trying to find someone, I think you'll need it!

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: Pause until the end of 1 minute.

Fraternities

CONFEDERATE: Pause 5 seconds waiting for subject to begin interaction.

If subject initiates (asks if you belong to a sorority or fraternity)...

CONFEDERATE: Yes, how about you?

If subject does not initiate...

CONFEDERATE: So, are you in a fraternity?

When subject responds...

CONFEDERATE: (If yes) I feel sorry for you! Frats are bad news. I'm getting out. They're a bunch of conformists.

CONFEDERATE: (If no) I feel sorry for you! You don't know what you're missing. It's the best way to meet people.

CPNFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) Yeah, frats are really a bunch of BS.

CONFEDERATE: (If no) Yeah, frats are really great.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) I'm sorry to hear you're into being Greek!

CONFEDERATE: (If no) I'm sorry to hear you're against the Greek system!

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I disagree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, disagreeing with subject.

If subject does not initiate...

CONFEDERATE: Pause until the end of 1 minute.

Appendix G

Nonchallenging Role Play Situations

College Major

CONFEDERATE: Pause 5 seconds waiting for subject to begin interaction.

If subject initiates (asks what your major is)...

CONFEDERATE: Foreign languages, what's yours?

If subject does not initiate...

CONFEDERATE: So, what's your major?

When subject responds...

CONFEDERATE: (If declared) Oh, that sounds like an interesting major!

CONFEDERATE: (If undeclared) That's probably the best thing to do while you see what's involved in different majors.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: (If declared) I'll bet you're pretty smart to be majoring in that!

CONFEDERATE: (If undeclared) I'll bet whatever you major in, you'll be good at it!

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: (If declared) You'll probably get a good job with your major.

CONFEDERATE: (If undeclared) You'll probably get a good job whatever you decide to do.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject doews not initiate...

CONFEDERATE: Pause until the end of 1 minute.

<u>Dating</u>

CONFEDERATE: Pause 5 seconds waiting for subject to begin interaction.

If subject initiates (asks if you are dating)...

CONFEDERATE: Yes, how about you?

If subject does not initiate...

CONFEDERATE: So, are you dating anyone?

When subject responds...

CONFEDERATE: (If yes) That's great! Going out with someone makes life at school much better!

CONFEDERATE: (If no) I know it's hard to meet someone you really want to go out with. It might be better anyway because relationships can interfere with school work.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) I'll bet your girlfriend is really nice.

CONFEDERATE: (If no) I'll bet you'll be going out with someone before too long.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) Well, it's good to hear you're going out.

CONFEDERATE: (If no) Well, don't worry, you'll be going out soon enough.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: Pause until the end of 1 minute.

<u>Fraternities</u>

CONFEDERATE: Pause 5 seconds waiting for subject to begin interaction.

If subject initiates (asks if you belong to a sorority/fraternity)...

CONFEDERATE: yes, how about you?

If subject does not initiate...

CONFEDERATE: So, are you in a fraternity?

When subject responds...

CONFEDERATE: (If yes) Great! Frats are fun and a good way to meet people.

CONFEDERATE: (If no) Great! I think you're smart. Frats are not all they're cracked up to be.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) Yeah, frats are really great.

CONFEDERATE: (If no) Yeah, frats are a bunch of BS.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: (If yes) I'm glad to hear you're into being Greek!

CONFEDERATE: (If no) I'm glad to hear you're against the Greek system.

CONFEDERATE: Pause 5 seconds waiting for subject to begin.

If subject makes a statement...

CONFEDERATE: I agree, etc., etc.

If subject asks a question...

CONFEDERATE: Answer as briefly as possible, agreeing with subject.

If subject does not initiate...

CONFEDERATE: Pause until the end of 1 minute.

Appendix H

Fran and four other students each attend one of the five different activities, including archery, that are offered once a week on different afternoons after school (the school week is Monday through Friday). Ms. Smith, Mr. Rose, and three other advisors lead the five activities. From the following clues, can you identify, by day and advisor, which activity each student attended?

1. Jody's activity is the day before one of the girls who attends the drama group.

2. Ms. Ball and Mr. Mack are the activity advisors for the two girls.

3. Lee, Jody, and Pat, in one order or another, have activities on succeeding days; Lee isn't in the activity with Ms. Park as advisor, which is not the chorus.

4. Sandy's activity is the day after the one led by Ms. Ball; neither activity is the chess club or the French club.

5. No two of the boys have activities on consecutive days, but that is not true of the male advisors.

6. Lee has his activity with a female advisor; it is on neither Monday nor Friday, and it is not the French club.

Solution is on page 64.

If you care to use the chart below in solving this problem, you do so by entering all information obtained from the clues using, perhaps, an X to indicate a definite "no" and a dot to show a definite "yes." Remember: Once you enter a definite "yes" (dot), put an X for "no" in the rest of the boxes in each row and column that contains the dot.

	archery	chess	chorus	drama	French	Ms. Ball	Ms. Park	Ms. Smith	Mr. Mack	Mr. Rose	M	Tu	W	Th	F
Fran															
Jody															
Lee															
Pat															
Sandy															
Monday															
Tuesday															
Wednesday															
Thursday															
Friday															
Ms. Ball															
Ms. Park															
Ms. Smith															
Mr. Mack															
Mr. Rose															

Appendix I

Time Urgent Situation

Confederate #1

CONFEDERATE: Aside from looking at how college students deal with typical situations (as you'll experience in a little while/as you've just experienced), we're interested in how students think and solve problems. Therefore, we're going to have you work on this logic problem. We're also interested in how long it takes people to complete the problem, so work as quickly as you can. You will get a second opportunity to work on it later, but try to do as much as you can now. The instructions are included on the page. You may begin.

Pause 15 seconds.

CONFEDERATE: It's kind of complicated, isn't it?

Pause 15 seconds.

CONFEDERATE: Get up, walk around, look over subject's shoulder, sit down.

Pause 15 seconds.

CONFEDERATE: Tap pen or fingers on table.

Pause 15 seconds.

CONFEDERATE: So, how's it going?

Pause 15 seconds.

CONFEDERATE: It would sure help if you knew which ones were girls and which ones were boys.

Pause 15 seconds.

CONFEDERATE: The boys are probably in archery and chess and the girls in chorus and drama and French.

Pause 15 seconds.

CONFEDERATE: Get up, walk to window, tap fingers on windowsill.

Pause 15 seconds.

CONFEDERATE: Have you figured anyone out for certain yet?

Pause 15 seconds.

CONFEDERATE: OK, time is up for now. You can work on it again later.

Confederate #2

CONFEDERATE: Now you have another chance to work on the logic problem you started earlier. You may begin.

Pause 15 seconds.

CONFEDERATE: Do you remember where you left off?

Pause 15 seconds.

CONFEDERATE: Lean across table and look at subject's paper.

Pause 15 seconds.

CONFEDERATE: Get up, walk around room, look out door, sit down.

Pause 15 seconds.

CONFEDERATE: Oh, (look at paper), I'll bet Mr. Mack and Mr. Rose supervise archery and chess because those are male activities.

Pause 15 seconds.

CONFEDERATE: I personally don't like these logic problems--they make you think too much.

Pause 15 seconds.

CONFEDERATE: I'd rather just do crossword puzzles--they're easier.

Pause 15 seconds.

CONFEDERATE: Stretch and yawn out loud.

Pause 15 seconds.

CONFEDERATE: That would be impossible if you didn't use the chart.

Pause 15 seconds.

CONFEDERATE: Did you figure out who the girls and boys are yet?

Pause 15 seconds.

CONFEDERATE: OK, time's up.

Appendix J

Rating Manual

ANXIETY

For this item, you are to rate the subject along a continuum from "not at all anxious" to "extremely anxious". The following nonverbal and verbal signs should be used to make tis rating. The first set of signs is more indicative of ratings 1-3 while the second set is more indicative of ratings 4-6. Your actual rating should be based on the extent to which the subject exhibits these signs.

Ratings 1-3	Ratings 4-6
Sits still in seat	Fidgets in seat
Leans back	Sits on edge of chair
Arms in open posture	Arms folded
Maintains eye contact	Averts gaze
Speaks evenly	Stutters
Breaths evenly	Breaths unevenly
Arms & legs still	Displays repetitive motor movements
Normal coloration	Face flushed
	Perspiration
	Remarks regarding procedures (e.g. I have a hard time role playing)

Remarks directly reflecting discomfort (e.g. I feel nervous)

ANGER

For this item, you are to rate the subject along a continuum from "not at all angry" to "extremely angry". The following nonverbal and verbal signs should be used to make this rating. The first set of signs is more indicative of ratings 1-3 while the second set is more indicative of ratings 4-6. Your actual rating should be based on the extent to which the subject exhibits these signs.

Ratings 1-3

Displays appropriate eye contact
Speaks in soft to normal voice
Speaks evenly
Smiles
Displays relaxed facial expression
Normal coloration

Ratings 4-6

Glares or stares
Speaks in loud voice
Speaks with modulation
Frowns
Displays grimaces
Face flushed
Interrupts confederate
Insults confederate
Threatens confederate
Refuses to respond

Speaks in hostile tone

ASSERTIVENESS

For this item, you are to rate the subject along a continuum from "not at all assertive" to "extremely assertive". The following nonverbal and verbal signs should be used to make this rating. The first set of signs is more indicative of ratings 1-3 while the second set is more indicative of ratings 4-6. Your actual rating should be based on the extent to which the subject exhibits these signs. Subjects, however, can lack assertiveness in one of two ways. They can be passive or aggressive. Thus, you should not reserve a rating of 1 for subjects who exhibit all of the signs in the 1-3 column since a subject, for example, is unlikely to make self-derogatory remarks and insult the confederate.

Ratings 1-3	Ratings 4-6
Displays inappropriate eye contact (e.g. stares or looks away)	Displays appropriate eye contact
Speaks too loudly or softly	Speaks in normal volume
Fails to initiate or dominates conversation	Initiates conversations
Fails to respond to confederate	Responds to confederate in direct,
Responds to confederate in an	

insulting manner

Makes self-derogatory remarks

Agrees with confederate on challenging prompts (e.g You're right--I'll never get a date)

noninsulting manner (e.g. I understand what you mean, but my experience has been different)

GENERAL DEMEANOR

For this item, you are to rate the subject along a continuum from "not at all friendly" to extremely friendly". This item is different from ANGER in that the latter implies a response to a specific stimulus or stimuli, while GENERAL DEMEANOR reflects more the way the subject behaves despite specific stimuli. The following nonverbal and verbal signs should be used to make this rating. The first set of signs is more indicative of ratings 1-3 while the second set is more indicative of ratings 4-6. Your actual rating should be based on the extent to which the subject exhibits these signs.

Ratings 1-3	Ratings 4-6
Frowns	Smiles
Grimaces	Displays relaxed facial expression
Speaks in sarcastic tone	Speaks in friendly tone
Displays sarcastic laughter	Displays easy laughter
Makes sarcastic remarks (e.g. Of course you have to be	Compliments confederate

smart to major in this!)

Questions/criticizes the procedures (e.g. This is a stupid puzzle)

Stares or glares

Maintains appropriate eye contact

OVERALL SOCIAL SKILL

For this item, you are to rate the subject along a continuum from "not at all skilled" to "extremely skilled". This item is actually a combination of the preceeding four itmes. Thus, you should use the signs from the first four items to make this rating. As before, your actual rating should be based on the extent to which the subject exhibits these signs.

INTEREST

For this item, you are to rate the subject along a continuum from "not at all interested" to "extremely interested" regarding the extent to which you would like to interact with the subject outside of the experiment. You should make this rating based on the subject's BEHAVIOR, rather than their physical appearance. You are to use your personal criteria in making this judgement which may or may not overlap with the behaviors outlined for the preceding items.

Appendix K

Observer Rating Form

Subject #: _____

Situation Type: _____

Confederate Initials: _____

Observer Initials: _____

Based on the 3 minute interaction which you have just viewed, rate this subject's behavior along the following dimensions.

1. Anxiety

1	2	3	4	5	6
not at all anxious					extremely anxious

2. Anger

1	2	3	4	5	6
not at all angry					extremely angry

3. Assertiveness

1	2	3	4	5	6
not at all assertive					extremely assertive

4. General Demeanor

1	2	3	4	5	6
not at all friendly					extremely friendly

5. Overall Social Skill

1	2	3	4	5	6
not at all skilled					extremely skilled

6. Interest

Given the opportunity, I would be _____ to interact with this person outside of the experiment.

1	2	3	4	5	6
not at all interested					extremely interested

Appendix L

Confederate Rating Form

Subject #: _____

Situation Type: _____

Confederate Initials: _____

Based on the preceding 3 minute interaction, rate this subject's behavior along the following dimensions.

1. Anxiety

1	2	3	4	5	6
not at all anxious					extremely anxious

2. Anger

1	2	3	4	5	6
not at all angry					extremely angry

3. Assertiveness

1	2	3	4	5	6
not at all assertive					extremely assertive

4. General Demeanor

1	2	3	4	5	6
not at all friendly					extremely friendly

5. Overall Social Skill

1	2	3	4	5	6
not at all skilled					extremely skilled

6. Interest

Given the opportunity, I would be _____ to interact with this person outside of the experiment.

1	2	3	4	5	6
not at all interested					extremely interested

Appendix M

Subject Rating Form

Subject #: _____

Situation Type: _____

Confederate Initials: _____

Based on the preceding 3 minute interaction, rate your own behavior along the following dimensions.

1. Anxiety

1	2	3	4	5	6
not at all anxious					extremely anxious

2. Anger

1	2	3	4	5	6
not at all angry					extremely angry

3. Assertiveness

1	2	3	4	5	6
not at all assertive					extremely assertive

4. General Demeanor

1	2	3	4	5	6
not at all friendly					extremely friendly

5. Overall Social Skill

1	2	3	4	5	6
not at all skilled					extremely skilled

6. Interest

Given the opportunity, I think the confederate would be _____ to interact with me outside of the experiment.

1	2	3	4	5	6
not at all interested					extremely interested

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