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DR. WALKER;

THANKS FOR YOUR HELP AND SUPERVISION PROVIDED DURING THE WRITING OF MY THESIS. I GREATLY APPRECIATE THE GUIDANCE AND SUPPORT YOU HAVE GIVEN ME WHILE AT UR.

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BY

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RUNNING HEAD: VASCULAR RESPONSE

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Abstract

Previous research on the frustration-aggression hypothesis and safety-signal hypothesis provides the basis for a situational explanation of behavior. Of particular importance are several studies by Hokanson (1961, 1962, 1963, 1966) regarding vascular stress. Several personality variables: locus of control, A-Trait and sex; are reviewed in their relevance to the explanation of behavior. This research explores the confluence of both the situational and dispositional perspectives on the prediction of behavior. Two studies are actually presented: one involves the validation of an evaluation instrument (see Appendix E); and the other investigates individual differences occurring with the use of the form.

In validation of a verbal measure of aggression, 32 Introductory Psychology students were frustrated during a timed mental task. Measures of systolic blood pressure indicated a significant elevation following the frustration manipulation. Sixteen subjects who completed a questionnaire evaluating the experimenter, were able to cope with the frustration and return their vascular level to baseline readings. Sixteen control subjects completed a self-evaluation questionnaire instead of the evaluation of the experimenter. Vascular measurements following this task indicated significantly higher systolic blood pressures.

Further investigation of the efficacy of the evaluation measure was done on 80 Introductory Psychology students previously measured on the Rotter I-E Scale (20 male internals; 20 male externals; 20 female internals; 20 female externals). One-half of the subjects were placed in a frustration condition similar to that of the validation study; and the remaining subjects served as a non-frustration control group. All subjects were given the Experimenter Evaluation Form following the baseline systolic reading, the frustrating/non-frustrating task, and the post-frustration systolic reading. A post-evaluation reading was taken following the completion of the evaluative-aggressive response. Results indicate vascular differences as well as evaluation/aggression score differences across groups (frustration/control). No significant differences were found across the variables of sex and locus of control. The results are discussed in their relevance to the interactionist perspective on behavior and motivation.

Locus of Control, Sex, Personal Adjustment and Vascular Stress Response

Motivational and personality research has frequently been fractured by the situation-trait dichotomy. Proponents of the view that behavior is primarily determined by the situation (Mischel, 1968; Skinner, 1969) have argued that behavior is not consistent enough across situations to merit a dispositional explanation. The existence of mental reifications is an unnecessary complication in the prediction of behavior. Quite the contrary, the advocates of a trait approach (Allport, 1937; Bowers, 1973) have virtually ignored situational determinants and supported the cognitive appraisal of behavior. The individual, endowed with certain dispositions, is directly involved in the selection of situations he or she will become exposed to. In reality, strict adherence to either pole in the situation-trait dichotomy is rare and the majority of experimental psychologists and theorists have adopted an organismic interactionist perspective. Endler and Hunt (1966) found that both situational and dispositional variables are necessary in the successful prediction of behavior. The recent cognitive-behavioral trend, which has provided new insight and a promising future for theory and therapy (Bandura, 1969, 1977;

Meichenbaum, 1977), has grown from this interactionist perspective. In compliance with the interactionist perspective and the confluence of cognitivism and behaviorism, this paper investigates the role of various personality dimensions and situational determinants upon overt and vascular stress responses. In particular, the frustration-aggression hypothesis forms the basis for the discussion on the situational determinants of behavior. The role of the safety-signal hypothesis and its explanation of anxiety will be considered as well.

Despite the extensive research in support of the above theoretical positions, very little has been completed investigating the dispositional determinants of behavior. The present study is an attempt to involve some very well-researched personality variables: anxiety, sex and locus of control, in these situational investigations. Relevant research from situational and dispositional perspectives will be reviewed below.

The Situational Perspective

With the development of the frustration-aggression hypothesis (Dollard, Doob, Miller, Mowrer & Sears, 1939), several experiments were conceived to explore complications of the variables involved. Doob and Sears (1939) questioned subjects upon their response to frustration and concluded that aggression is the primary reaction to

frustration providing there is adequate strength of both the frustrated goal response and the anticipation of punishment. This aggressive response "reduces the secondary, frustration-produced instigation and leaves the strength of the original (non-aggressive) instigation unaffected" (Dollard, et al., 1939, p. 11). Thus, aggression, in response to frustration, was hypothesized as a cathartic mechanism involved in drive reduction and coping with a stressor.

As the singular explanation for aggressive behavior, the frustration-aggression hypothesis did not go uncontested -- which led some of its adherents (Miller, 1941; Sears, 1941) to modify the theory. This modification cited other effects of frustration (such as withdrawl or dependent behavior) and other antecedent conditions to aggression (such as direct or observational learning). Bandura, the foremost critic of the catharsis hypothesis, cites evidence from several empirical studies (Doob & Climie, 1972; Doob & Wood, 1972) that demonstrate an increase in aggressive behavior in non-frustrated subjects who simply observed aggressive behaviors. Despite these cogent statements that deny the existence of the catharsis phenomenon, Hokanson and several students and co-workers (1961, 1962a, 1962b, 1963, 1966) found evidence to support the catharsis hypothesis in experiments and studies

investigating cardiovascular responses to stress.

In a series of studies (1961, 1962a, 1962b, 1963, 1966), Hokanson was determined to overcome the highly subjective, non-standardized measuring devices, such as questionnaires, rating scales and interviews, previously employed in frustration-aggression experiments. Direct behavioral measures of galvanic skin response, blood pressure and number, duration and intensity of aggressive responses were utilized (1961). Blood pressure and galvanic skin response were constantly monitered throughout a baseline period, a frustrating or non-frustrating intellectual task and the subsequent response to the frustrating condition: aggression. A direct measurement of the aggressive act was obtained by counting the number of shocks, the length of the shocks and the intensity used in the deliverance of the shock supposedly administered to the individual who had previously frustrated the subject. The results indicate that frustration induces a rise in systolic blood pressure and hostility toward the experimenter/frustrator (the administration of significantly more shocks at a greater intensity). However, a significant negative correlation was found between the vigor of the aggressive response and the degree of anger felt toward the frustrator, suggesting the existence of a cathartic mechanism within the aggressive response.

Other support for a catharsis hypothesis was inferred from a transient positive correlation between systolic blood pressure and pressure per shock during the aggressive phase and its reversal to a negative correlation following the expression of aggression.

Another study (Hokanson & Shetler, 1961), based upon the earlier study, dealt purely with physiological arousal mechanisms. Utilizing similar methodology, subjects were placed in either a non-frustrating or frustrating condition- with either a high status or low status frustrator- and with the opportunity to shock the frustrator or no opportunity to do so. Systolic blood pressure readings were recorded during each phase of the experiment and demonstrated significant increases in the frustration condition. Subjects frustrated by a high or low status frustrator and subsequently permitted to aggress against him were able to decrease systolic blood pressure readings to pre-frustration levels. Subjects frustrated by a low status experimenter with no opportunity to aggress maintained significantly greater systolic elevations. Thus, under certain conditions, overt aggression has tension-reducing properties.

Subsequent research has explored different effects of various types of aggression, frustration and task upon the systolic blood pressure level. Hokanson and Burgess

(1962a) measured systolic elevation and heart rate following physical aggression-shock, verbal aggression-questionnaire deriding the experimenter, fantasy aggression-TAT projection, and no aggression conditions. In concordance with previous studies, a significant increase in systolic level was obtained during the frustration phase. With respect to the aggression phase, the frustrated subjects who were given the opportunity to aggress physically or verbally decreased their systolic activity to pre-frustration levels. Frustrated subjects in the fantasy and no aggression conditions maintained an elevated systolic blood pressure.

Hokanson and Burgess (1962b) explored the effects of status (high status:professor; low status:student) and different types of frustration (ego-threat, blocked goal or no frustration conditions) upon the cardiovascular measures of systolic blood pressure and heart rate. Both ego-threat and blocked goal frustrations produced significant increases in systolic pressure. The subject was subsequently placed in a verbal aggression or no aggression condition. With a low status frustrator, systolic pressure decreased with the opportunity to react aggressively; while no substantial reductions in cardiovascular activity were exhibited following aggression against a high status frustrator. Similar studies depict: a.) No

significant reduction in systolic blood pressure with a displaced aggression object (Hokanson, Burgess & Cohen, 1963); b.) Significant reduction in hostility with the ability to verbally communicate with the frustrator as well as vicariously participate through others who denounce the frustrator (Rosenbaum & DeCharms, 1960); and c.) Significant increases in hostility and exercise of coercive power following fantasy aggression (Rabinowitz & Shouval, 1977; Tedeschi, 1979).

At the culmination of his studies on vascular processes, Hokanson standardized his data collection by measuring cardiovascular levels at fixed intervals by a blind experimenter (Hokanson & Edelman, 1966). In addition, the variable of sex was investigated with respect to differential reactions to frustration. Upon receiving a frustrating stimulus (shock), the subject was given a choice of "shocking", "rewarding" or "not responding" to the aggressor. Control subjects were denied the opportunity to respond but nonetheless received the same frustration. Males in the experimental group responded more frequently by shocking the aggressor which led to a rapid decline in vascular levels. Those who chose to either reward or withdraw from the situation maintained vascular levels similar to the slowly-recovering control group. Females, on the other

hand, exhibited equal rates of response across all modalities which likewise led to a decrease in vascular activity. The female control group, however, maintained a prolonged elevation of vascular activity. When no social counter-response was available, the females typically became uncomfortable and maintained high levels of cardiovascular activity throughout the experiment.

In summary, Hokanson has concluded that an aggressive counter-response to frustration or direct aggression is accompanied by a rapid return of systolic blood pressure to pre-frustration levels. However, several conditional statements have become apparant. This tension-reducing, stress-coping mechanism does not occur: with a high status frustrator (Hokanson & Burgess, 1962b), with displaced aggression (Hokanson, Burgess & Cohen, 1963), with fantasy aggression (Hokanson & Burgess, 1962a, Spiegel & Zelin, 1973), and with female subjects (Hokanson & Edelman, 1966).

The Dispositional Perspective

The frustration-aggression hypothesis, despite its many revisions and amendments, cannot singularly account for behavior occurring during stressful situations. This is clearly pointed out by Hokanson & Edelman (1966) and their exploration of sex differences in responding to frustrating situations.

Hokanson, Willers and Koropsak (1968) delineated this sex difference a little more clearly by utilizing a learning paradigm. In compliance with the work of Hokanson and Edelman (1966), females were found to select a friendly counter-response to aggression over an aggressive counter-response. Males, conversely, selected the aggressive counter-response over the friendly response. The selected counter-response served effectively as a tension-reducing mechanism for both sexes. In contrast with the previous work, a learning and extinction phase were introduced to demonstrate the reinforcing properties of the selected counter-response. With appropriate reinforcement, the males learned the friendly response and the females learned the aggressive response. When random non-reinforced aggressive acts were presented following the learning phase, the previously preferred counter-response returned. The study concludes that one's response to aggression or frustration is learned through sex-role socialization processes. These conclusions warrant a closer investigation of the role of individual differences in the selection and effectiveness of stress responses.

Likewise, Shope, Hedrick and Green (1978) explored sex differences in style of aggressive response. Their results indicate that females prefer verbal aggression

(insults),whereas males prefer to utilize both verbal and physical aggression. Both modes of aggression serve to reduce psychophysiological measurement elevations in the male,whereas the verbal mode is the only effective tension reducer for the female.

A similar study (Scarpetti, 1974) focused upon the personality dimension of Repression-Sensitization. Repressors, defined as individuals who typically deny the existence of threatening events, have learned to cope by avoiding the situation; whereas sensitizers are individuals who exaggerate the nature of threatening situations and prefer to confront the provocation of aggression. Results demonstrate a preference for aggressive counter-responses among sensitizers and a preference for reward counter-responses among repressors. Electrodermal and plethysmographic recordings indicate a cathartic effect for both repressors and sensitizers when using their preferred mode of response. A reinforcement phase and extinction phase similar to the methodology of Hokanson, Willers and Koropsak (1968) was utilized in this study producing identical effects.

In summary, the studies presented above have shown the importance of the dispositional characteristics of the individual coping in a frustrating situation. Personality differences as well as sex differences are of

extreme importance in the determination of the behavior to occur.

The Interactionist Perspective

The research from both the situational and dispositional perspectives is deemed valuable in the interactionist view. Although the previous sections have presented some research that has involved the investigation of trait variables as well as situational variables, the best example of research using the interactionist perspective is the work involving individual control of the situation.

Hokanson, DeGood, Forrest and Brittain (1971) explored the effects of cognitive processes involving control upon the vascular stress response. In an avoidance task, the experimental group had control over the time and frequency of rest periods whereas a yoked control group did not. The experimental group manifested significantly lower systolic blood pressure levels in response to the frustrating avoidance task. Thus, the anticipation of the removal of the stressor is capable of reducing vascular stress.

In similar studies, Manuck et al. (1978) and Hokanson and Sacco (1976), demonstrated vascular stress elevations and heightened motivational states among subjects that had a degree of control over the situation. This

occurred, however, only in the "task difficult" condition suggesting that active coping, contingent upon the subject's performance, actually increases cardiovascular activity. This apparent contradiction has evolved from the nature of the control-coping response (Manuck, et al., 1978). The arousal reduction hypothesis supported by Hokanson, DeGood, Forrest and Brittain (1971) utilized an effort-free control condition; whereas the sympathetic arousal hypothesis of Manuck et al. (1978) made use of a demanding coping response.

In concurrence with these studies investigating the situational aspects of control, Rotter's (1966) development of the measure of internal versus external locus of control of reinforcement has proven valuable. In brief, the scale is a barometer of an individual's generalized expectancies about the future based on past experiences. The "internal" believes he or she can control what happens to him or herself; whereas an "external" deems all events beyond his or her control and occurring by chance. The studies above (Hokanson, DeGood, Forrest & Brittain, 1971; Hokanson & Sacco, 1976; Manuck, et al., 1978) have emphasized the effects of situational control. The purpose of the present experiment, stated again, is to explore the dispositional-situational interaction, primarily the stable generalized expectancy of control of

reinforcement and its relationship to vascular and overt stress responses.

Literally thousands of studies have been completed using the personality dimension of locus of control. In this paper a complete review is not necessary, as several have already been done (Joe, 1971; Phares, 1978; Senkfor, 1979). Of relevance here, however, are the previous studies investigating the situational aspects of control and their suggestion to explore more closely this area with respect to the dimension of locus of control (Hokanson, DeGood, Forrest & Brittain, 1971). Other studies dealing with the measure of locus of control and personal adjustment have served useful in the explanation of pathological behavior, particularly anxiety disorders (Joe, 1971; Phares, 1976), schizophrenia (Cromwell, Rosenthal, Shakow & Zahn, 1961), depression (Hiroto, 1974; Seligman, 1975), alcoholism (Nowicki & Hopper, 1974) and drug abuse (Berzins & Ross, 1973). In general, physical and psychological adjustment has been associated with the "internal" on the scale of locus of control and maladjustment has been associated with the "external." Phares (1976, 1978) suggests the more active, striving and self-reliant qualities of the internal as being responsible for this linear relationship.

A recent study by Wortman et al. (1976) also per-

ceived the attribution of causality rather than the mere lack of control as imperative in producing stress. "Subjects who attribute their inability to control an aversive outcome to their own inadaquacy appear to experience considerably more stress than subjects who attribute it to factors in the environment or situation" (Wortman, et al., 1976, p. 311). Surprisingly, the subjects who attribute failure to themselves and experience more stress, performed more successfully on subsequent tasks than did those who attributed failure to situational determinants. In Rotter's terminology, the "internal" experiences considerably more stress but is able to cope with it more successfully than the "external."

The safety-signal hypothesis (Seligman, Maier & Solomon, 1970) has implicated lack of control over a situation as the primary cause of anxiety. It states "in the wake of traumatic events, people and animals will be afraid all the time, except in the presence of a stimulus that reliably predicts safety. In the absence of a safety-signal, organisms remain in anxiety and chronic fear" (cited by Sahakian, 1979, p. 72). Thus, a situation under control creates less anxiety. The previously cited investigation by Hokanson, DeGood, Forrest and Brittain (1971) bears this out.

Despite the adequate explanation of situational

anxiety in an uncontrollable event, the safety-signal hypothesis is not broad enough to explain the association between the external locus of control, anxiety and maladjustment (Phares, 1978). In order to incorporate the findings of Phares (1976) and others (Joe, 1971; Strickland, 1974) into an adequate explanation of anxiety, the proponents of the safety-signal hypothesis would have to expand its limited situational scope to allow the dispositional properties to emerge in a more robust definition of the etiological basis of anxiety. This, likewise, is a purpose of the present study.

Anxiety, throughout research, has been measured in a variety of ways: physiological measurements, behavioral observation, subjective report and self-report questionnaires. Although measures such as the Taylor Manifest Anxiety Scale (Taylor, 1953), the 16 PF (Cattell, Eber & Tatsuoka, 1970), and the Mood Adjective Checklist (Nowlis, 1965) have been used as barometers of anxiety, measurement could not be considered complete until the State-Trait Anxiety Inventory (STAI) was developed (Spielberger, et al., 1970).

The STAI allows a separate measurement of A-state and A-trait. While A-state is situationally determined, the A-trait is a more stable personality characteristic. The A-trait scale from the STAI will provide the measure of

anxiety for the purposes of the present study. It has been shown to correlate highly with other standard anxiety measures (Spielberger, et al., 1970) as well as record a stable trait across varying situations (Auerbach, 1973; Spielberger, et al., 1970)

In the integration of situational and dispositional perspectives it is essential that yet another area of personal adjustment be mentioned. Essential hypertension (high blood pressure) is unique in that over half the people who suffer from it are unaware of it (Duke & Nowicki, 1979). There is no apparant organic factor involved in essential hypertension-which suggests a psychological etiology. The fact that populations undergoing rapid cultural and economic change, urban communities and blacks suffer from hypertension more frequently also points toward a psychological explanation (Duke & Nowicki, 1979).

Psychoanalytic theory has explaned essential hypertension as a result of not expressing aggressive impulses. Unlike neurotics, hypertensive patients are unable to make use of effective defense mechanisms. In a closer examination, Davies (1970) found that neurotic patients do indeed have lower blood pressures than individuals who do not manifest neurotic symptoms. The studies presented earlier by Hokanson and others (1961, 1962,

1963, 1966, 1971) have demonstrated the relationship between the release of aggressive impulses and the reduction in systolic blood pressure in a similar manner. His studies have postulated this inability to release aggressive impulses as a causal mechanism in the development of maladaptive psychophysiological behavior. This, of course, has been assumed by therapists for decades. Seldom criticized is the belief that discharge has therapeutic value. A review of current research involving the expression of feelings by Marshall (1972) suggests a closer look at methodology and validity is necessary in order to explain this belief precisely. The present study aids in this further investigation of the expression of feelings, primarily aggressive impulses, and the delineation of the catharsis phenomenon.

It has become apparant that the lack of control in a given situation plays an influential role in the development of anxiety maladjustment and psychophysiological disorders, particularly essential hypertension. It is the purpose of the present study to investigate the generalized expectancies of control as measured by the Rotter I-E Scale, rather than the situational determinants of control. This will serve to clarify the importance of an interactionist perspective on behavior and motivation.

The preceding literature review has provided a

framework for the confluence of the situational and dispositional perspectives in the determination of behavior. Past research on the frustration-aggression hypothesis, vascular stress, locus of control, the safety-signal hypothesis and the psychoanalytic catharsis viewpoint has been reviewed in its relevance to the following hypotheses:

1.) Cardiovascular measures of systolic blood pressure will increase during the frustration phase and decrease to pre-frustration levels following the aggressive response.

2.) Internal locus of control subjects will obtain greater elevations in vascular measures during the frustration phase than the externals.

3.) No sex differences with respect to vascular measurements.

4.) The aggressive response will be most intense in male internals, least intense in female externals, and intermediate in male externals and female internals.

5.) There will be a significant positive correlation between: externality and trait anxiety, and internality and baseline blood pressure.

Method

Subjects: All Introductory Psychology students at the University of Richmond were administered the Rotter I-E Scale (see Appendix B). Ninety-seven males with a median score of 10.69 and 87 females with a median of 11.25 made up the population. The population was divided at the 33rd and 66th centile rank (8.61 and 12.14 for the males and 9.26 and 13.62 for the females) with the individuals scoring above the 66th percentile classified as externals, and those below the 33rd percentile as internals. From this sample, 80 students (20 male internals; 20 male externals; 20 female internals; and 20 female externals) actually participated in the study. One half of the subjects were placed in the frustration condition via random assignment and the remainder were assigned to the non-frustrating control condition.

Procedure: Subjects were brought to the experimental room individually and seated at a table with the experimenter. The subject is given the Informed Consent Form (see Appendix A) and asked to read it thoroughly and sign it. After the experimenter receives the signed consent form, he attaches the blood pressure cuff to the subject's non-dominant upper arm and reads the following instructions to the subject:

This study is an investigation of the effects of

> various tasks upon the level of your systolic blood pressure. Two of the tasks are paper and pencil questionnaires differing in the nature of response format and content. The third task involves mental speed and alertness. Specific instructions will be given prior to each task. The tasks will be presented in a random manner. Do you have any questions?

The subject is then given the A-Trait Questionnaire (see Appendix C) and the following instructions:

> Read the instructions and complete this questionnaire. During the period you are working on making your best responses to the questions, I will make a reading of your blood pressure. Do not stop while I am getting this measurement--simply continue with the questionnaire. Do you have any questions?

The subject then completes the questionnaire and a measure of systolic blood pressure is obtained at the halfway point.

After the completion of the initial task, the subject is read the following:

> This next task involves the measurement of your blood pressure during a timed motor/mental task. I am going to ask you to do something and I want you to complete it as quickly as you can. Directly following this task, I will be taking another measurement so hold your arm still during this period. This task will be timed and you will have to get under a specific critereon. Do you have any questions? When I say "go" I want you to count backwards from 100 by threes as quickly as you can. Ready? Go.

During this phase of the experiment the frustration group (10 male internals; 10 male externals; 10 female internals; and 10 female externals) is interupted three times by the experimenter. The first interuption is simply, "That is not fast enough. Could you start over?" The second and

third interuptions ("That is the slowest time yet. You'll have to try again" and "I guess you'll never get it fast enough. We'll just go on after I get this reading.") are stated with an angry tone of voice. The control group (the remaining 40 subjects) is permitted to finish the task uninterupted; after which the experimenter says: "Good. That was fine." At this point, the second systolic measurement is made.

The Experimenter Evaluation Form (see Appendix D) is then given to the subject accompanied by the following instructions:

> This task involves the evaluation of me as an experimenter. Complete the questionnaire according to the directions provided and seal the form in the envelope. To ensure your confidentiality, mix the sealed envelope in with the rest in this pile. I will leave the room so I don't influence your evaluation in any way. Call me when you are finished so I can obtain a final measure of your blood pressure.

The subject then is allowed three minutes to complete the evaluation and place it in the stack of marked envelopes. Approximately three and a half minutes after the experimenter left the room, the final systolic measurement is made. The subject is debriefed according to the guidelines noted in Appendix F.

Results

Systolic blood pressure readings were analyzed through a four factor Analysis of Variance (ANOVA) with

the factors being sex, locus of control, group (non-frustration-control group or the frustration group), and repeated measures of systolic blood pressure. The homogeneity of variance was demonstrated through the F_{max} ratio of 2.54 which is not significant at the .05 confidence level ($F_{max\ .95} = 8.95$; df = 9/8).

The analysis reveals a significant interaction between vascular measurements and group at the .05 level of confidence (see Table 1 and Figures 1 and 2), as well as a main effect for sex. The design was split across vascular measurements (Tables 2, 3 and 4) and across groups (Tables 5 and 6) to attain a clearer picture of the vascular measurements by group interaction. Significant differences were found to exist: a.) between groups at the post-frustration measure; b.) between measurements of baseline and post-frustration levels of systolic blood pressure in the frustration and control condition; and c.) between measures of post-frustration and post-evaluation levels of blood pressure in both groups. The differences between groups at baseline and at the post-evaluation measure were not significant; and likewise, the differences between these measures was not significant for both groups. The main effect for sex is apparent when the means for each sex are calculated (males: $\bar{X} = 125.58$; females: $\bar{X} = 111.17$).

The difference in vascular levels at the three measurement intervals was calculated to obtain separate measures of vascular change during frustration (post-frustration level minus baseline level) and vascular change following aggression (post-frustration level minus post-evaluation level). The correlation between these measures was significant at the .05 level of confidence ($z = 5.32$; $z_{.95} = 1.96$). Although vascular change during frustration did not correlate with any other measure (see Table 9), vascular change following evaluation/aggression did negatively correlate with the measures of A-Trait and evaluation-aggression score ($z = -2.28$ and -4.31 respectively; $z_{.95} = -1.96$). Vascular change was not calculated for subjects in the non-frustration condition.

An evaluation-aggression score was obtained from the Experimenter Evaluation Form using the revised positive equal interval scoring system (see Appendix D). A principle components factor analysis with varimax rotation yielded the factor loadings in Table 7. Factor 1 accounted for 27.8 per cent of the total variance and was identified as the primary factor of the evaluation instrument. All items that contributed negatively to this factor were dropped from the scoring system (items 2, 5 and 10).

A 2 X 2 X 2 ANOVA was used to analyze the evaluation-aggression scores (sex by locus of control by group). The

homogeneity of variance was assured through an F_{max} of 4.58 ($F_{max\ .95}$ = 8.95; df = 9/8).

The analysis, summarized in Table 8, revealed a main effect for the group the subject was in (frustration or non-frustration). Group means are plotted in Figure 3; overall means for the frustration condition and control condition are 29.625 and 32.5 respectively.

The measures of A-Trait, Locus of Control, Evaluation/Aggression Score and baseline blood pressure were correlated using the Pearson Product-Moment Correlation (see Tables 9, 10 and 11). No significant relationships were shown to exist when the subjects were split across groups. However, when all subjects are included, the matrix reveals some significant relationships between: a.) Locus of Control and A-Trait ($r = .22$, $z = 2.27$; $z_{.95} = 1.96$); b.) Locus of Control and baseline blood pressure ($r = -.62$, $z = -6.50$; $z_{.95} = -1.96$); and c.) A-Trait and baseline blood pressure ($r = -.50$, $z = -5.26$; $z_{.95} = -1.96$).

Discussion

From a strict situational point of view, the results of the present study reflect the importance and validity of the frustration-aggression hypothesis and the catharsis phenomenon. The significant interaction between vascular measurements and group delineates the

distinct increase in systolic activity during frustration and the inevitable return to baseline levels following the evaluation of the experimenter (aggressive response). Of equal importance is the main effect for group in the analysis of the evaluation/aggression scores. This clearly demonstrates that the individuals placed in the frustration condition evaluated the experimenter in more negative terms than did those placed in the non-frustration condition. The negative correlation between evaluation/aggression score and vascular change following evaluation is likewise indicative of the power and utility of the evaluative instrument. This relationship would state that an individual who lowers his or her blood (systolic) pressure a great deal during the evaluation generally evaluates in the negative direction. Although the efficacy of the instrument is cogently supported, there is some question as to how different individuals make use of it. Some subjects utilized the instrument to rate the experimenter positively while others preferred to evaluate in the aggressive (negative) direction. Both modes of response allow the subject to return his or her vascular pressure to baseline levels; thus effectively coping with the frustration. Therefore, it can be said that the aggressive response is secondary to the cognitive appraisal of individual control. By simply knowing that one

has the opportunity to evaluate the experimenter in a negative direction permits the individual to feel as if he or she has a degree of control over the situation. This attribution of personal control is directly responsible for the reduction in systolic blood pressure. The argument for this cognitive appraisal of control lends direct support to the safety-signal hypothesis. To go one step further, the negative correlation between the evaluation/aggression score and A-Trait defines a rudimentary explanation of anxiety that incorporates dispositional variables as well as the situational aspects. In essence, a highly anxious individual, defined by a high score on the A-Trait Questionnaire, generally is unable to cope with the frustration as successfully as those who have low A-Trait scores. Future research should explore this relationship further.

Whereas the situational perspective has been clearly supported through the results, the gains of a dispositional perspective have not been as apparent. There were no significant differences across the variables of sex and locus of control with respect to the evaluation/aggression score. Differences in vascular measurements were also found to be non-significant across the two dispositional variables. The only exception, of course, was the main effect for sex with respect to vascular measures, which

simply restates a well-known medical fact: females are generally smaller than males, thus having lower blood pressures. The sex difference (sex by vascular measurements) hypothesized to be non-significant was found to be simply that.

The non-significant F-ratios of the variable of locus of control stand in direct opposition to the hypotheses proposed. However, some speculation over these results is permitted as the plotted means (Figures 1, 2, and 3) indicate subtle differences disguised under a vast range of variability. In order to expose these differences, some suggestions have been entertained. For example, if the selection of subjects would allow a significant difference between the samples of internals and externals (at least one standard deviation), the factor of locus of control would become more distinct. The present study utilized a more liberal (centile rank) selection procedure which allowed an adequate sample size but introduced a greater degree of variability among the measures of locus of control. Past research (Phares, 1978) has identified another interesting variable: the existence of the "defensive external." Essentially, this individual is a person who uses externality as a defense mechanism and in reality may not exhibit similer ideology with the true external. The exclusion of such individ-

uals would, likewise, purify the dimension and allow for a more accurate analysis.

As well as reducing the variability within the measure of locus of control, it is also important to consider the standardization of the frustration manipulation. Individual differences indicate a great degree of variability in the systolic blood pressure increase during the frustration condition. One subject may become extremely frustrated and raise his or her blood pressure 24 mm wheras another subject's elevation may be non-existent. Skinner (1969) emphasizes direct observation of this individual behavior in research, discounting the importance of nomethetic statistical significance. This is a valid point taken to the extreme position. Strict behaviorist research would have ignored the dispositional variables completely, thus denying an interactionist perspective of behavior that is paramount in the present study. However, the whole issue of individual differences could be avoided through the introduction of a standard operational definition of frustration. For example, had a 10mm elevation defined the state of frustration, the variability caused by individual differences would be negligible, resulting in a more succinct analysis.

From a critical methodological viewpoint, a third (blind) person could be introduced to take the vascular

measurements at intervals throughout the study. Some effort was made in the present study to limit the effect of experimenter bias by keeping the experimenter blind as to the subject's I-E score. The other variables, however, were easily observed by the experimenter.

Although the inclusion of the A-Trait measure was of secondary importance, some interesting correlations were demonstrated. The results indicate a positive correlation with locus of control, a negative correlation with baseline blood pressure, and a negative correlation with systolic blood pressure change following evaluation. This suggests that a highly anxious individual is generally more external in locus of control, has a lower systolic blood pressure and has difficulties reducing vascular elevations caused by frustration. These correlations merit a closer look at the variable of A-Trait with respect to the vascular system and the coping of frustration in future studies.

Locus of control, as well as A-Trait, correlated negatively with baseline blood pressure, lending support to the hypothesis that well-adjusted individuals maintain higher blood pressures and poorly adjusted individuals, as defined by the A-Trait Questionnaire and the I-E Scale, maintain lower blood pressures. These results support research conducted by Davies (1970) in his

investigation of neurotic patients versus patients suffering from psychosomatic or psychophysiological disorders.

From the interactionist perspective, the present work is valuable in its firm replication of the frustration aggression hypothesis and its suggestions for future research involving several personological variables, such as sex, locus of control and the anxiety trait. Relationships between the dispositional variables also indicate the importance of future research in understanding the etiology of abnormal behaviors and personal adjustment. As well as providing methodological cues for future research, the present work has been vital in the development of a quantitative measure of evaluation/aggression, through the validation of the Experimenter Evaluation Form.

The interactionist perspective of this study clearly demonstrates the importance of both situational and dispostional variables in the explanation and prediction of behavior. Future research in personality and the investigation of motivation should utilize this interactionist framework.

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Table 1

Vascular Measurements by Sex by Locus of Control by Group

Analysis of Variance Summary Table

Source	df	SS	MS	F	p
Between:					
Sex	1	12470.4	12470.4	40.92	.05
Locus of Control	1	114.8	114.8	.38	n.s.
Group (Frustration/ Control)	1	813.8	813.8	2.67	n.s.
Sex by Locus of Control	1	1016.8	1016.8	3.34	n.s.
Sex by Group	1	89.0	89.0	.29	n.s.
Locus of Control by Group	1	0.3	0.3	.00	n.s.
Sex by Locus of Control by Group	1	0.7	0.7	.00	n.s.
Subjects within groups	72	21941.8	304.7		
Within:					
Vascular Measurements	2	2241.3	1120.7	93.59	.05
Vascular Measurements by Sex	2	7.7	3.9	.32	n.s.
Vascular Measurements by Locus of Control	2	2.0	1.0	.08	n.s.
Vascular Measurements by Group	2	1255.7	627.9	52.44	.05
Vascular Measurements by Sex by Locus of Control	2	10.7	5.4	.45	n.s.
Vascular Measurements by Sex by Group	2	0.2	0.1	.01	n.s.

Table 1 (continued)

Vascular Measurements by Sex by Locus of Control by Group Analysis of Variance Summary Table

Source	df	SS	MS	F	p
Vascular Measurements by Locus of Control by Group	2	3.4	1.7	.14	n.s.
Vascular Measurements by Sex by Locus of Control by Group	2	5.5	2.75	.23	n.s.
Vascular Measurements by Subjects within groups (error)	144	1724.2	11.97		

$F_{.95} = 3.98$ (df = 1/72)

$F_{.95} = 3.00$ (df = 2/144)

Table 2

Frustration/Control Groups at Baseline Measurement

Source	df	SS	MS	F	p
Between:					
Group	1	7.2	7.2	.00	n.s.
Subjects within groups	78	11724.0	150.3		

$F_{.95} = 3.98$ (df = 1/78)

Table 3

Frustration/Control Groups at Post-Frustration Measure

Source	df	SS	MS	F	p
Between:					
Group	1	2060.5	2060.5	11.28	.05
Subjects within groups	78	14243.0	182.6		

Table 4

Frustration/Control Groups at Post-Evaluation Measure

Source	df	SS	MS	F	p
Between:					
Group	1	1.8	1.8	.01	n.s.
Subjects within groups	78	11420.4	146.42		

Table 5

Vascular Measurements in the Frustration Condition

Source	df	SS	MS	F	p
Between:					
Subjects within groups	39	19945.1	511.41		
Within:					
Vascular Measures	2	3421.4	1710.7	107.61	.05
Vascular Measures by subjects within groups	78	1240.	15.9		

$F_{.95} = 3.13$ (df = 2/78)

Newman Keuls' Analysis

Vascular Measure		3	1	2	
	$\bar{X}$ =	116.0	116.9	127.75	
3			.9	11.75	.05
1			n.s.	10.85	.05
2					

Critical Values $_{.95}$ (df = 78/2) = 1.78

(df = 78/3) = 2.14

Table 6

Vascular Measurements in the Non-Frustration Condition

Source	df	SS	MS	F	p
Between:					
Subjects within groups	39	15688.6	15688.6		
Within:					
Vascular Measures	2	75.6	37.8	5.74	.05
Vascular Measures by Subjects within groups	78	513.8	6.59		

$F_{.95} = 3.13$ (df = 2/78)

Newman Keuls' Analysis

Vascular Measures	3	1	2	
	$\bar{X}$ = 115.7	116.3	117.6	
3		.6 n.s.	1.9	.05
1			1.3	.05
2				

Critical Values $_{.95}$ (df = 78/2) = 1.16
(df = 78/3) = 1.39

Table 7

Factor Loadings on Individual Items of the Experimenter Evaluation Form - Principle Components Factor Analysis -

Item	Factor: 1	2	3	4	5
cautious-rash	.14	.00	-.02	.82	-.09
skeptical-gullible	-.42	-.08	.65	.16	.27
pragmatic-unrealistic	.48	-.04	.39	.25	-.28
self controlled-impulsive	.34	.65	.06	.09	-.14
firm-lax	-.22	.68	.13	.07	.06
cooperative-uncooperative	.76	.08	.01	.30	-.03
bold-timid	.01	.74	-.10	-.10	.25
alert-lethargic	.19	.37	-.31	.05	.54
relaxed-tense	.73	.03	-.05	.09	.12
selective-undiscriminating	-.75	.15	-.04	.17	-.07
uninhibited-inhibited	.63	-.03	.05	.07	.52
individualistic-conforming	.09	.04	.23	-.05	.62
trusting-distrustful	.64	.10	.25	.45	.05
open minded-fanatical	.49	.19	.13	.42	.29
idealistic-opportunistic	.25	-.06	.65	.07	.15
tolerant-choosy	.68	.24	.21	.12	.17
lenient-severe	.56	-.06	-.05	.45	.10
committed-noncommital	.13	.31	.65	-.21	-.12

Table 8

Evaluation-Aggression Score across Sex, Locus of Control, and Group - Analysis of Variance Summary Table

Source	df	SS	MS	F	p
Between:					
Sex	1	2.113	2.113	.25	n.s.
Locus of Control	1	2.813	2.813	.33	n.s.
Group	1	165.313	165.313	19.54	.05
Sex by Locus of Control	1	17.112	17.112	2.02	n.s.
Sex by Group	1	2.812	2.812	.33	n.s.
Locus of Control by Group	1	.312	.312	.04	n.s.
Sex by Locus of Control by Group	1	17.113	17.113	2.02	n.s.
Subjects within groups (error)	72	609.1	8.4597		

$F_{.95} = 3.98$ (df = 1/72)

Table 9

Correlation Coefficients

Frustrated Subjects

	Vascular Ch. Frustration	Vascular Ch. Aggression	Locus of Control	A-Trait	Evaluation-Aggression Score
Vascular Change during Frustration	1.00	.72*	-.07	.04	-.18
Vascular Change following Aggression		1.00	.00	-.31*	-.58*
Locus of Control			1.00	.04	-.21
A-Trait				1.00	-.07
Evaluation-Aggression Score					1.00

* significant at the .05 level of confidence

Table 10

Correlation Coefficients

Non-Frustrated Subjects

	Locus of Control	A-Trait	Evaluation Aggression Score
Locus of Control	1.00	.17	-.12
A-Trait		1.00	-.07
Evaluation-Aggression Score			1.00

* significant at the .05 level of confidence

Table 11

Correlation Coefficients

All Subjects (N=112)

	Locus of Control	A-Trait	Evaluation-Aggression Score	Baseline Blood Pres.
Locus of Control	1.00	.22*	-.19	-.62*
A-Trait		1.00	-.15	-.50*
Evaluation-Aggression Score			1.00	-.00
Baseline Blood Pressure (systolic)				1.00

* significant at the .05 level of confidence

Figure 1

Vascular Measurements in Frustrated and Non-Frustrated Subjects (20 male internals; 20 male externals)

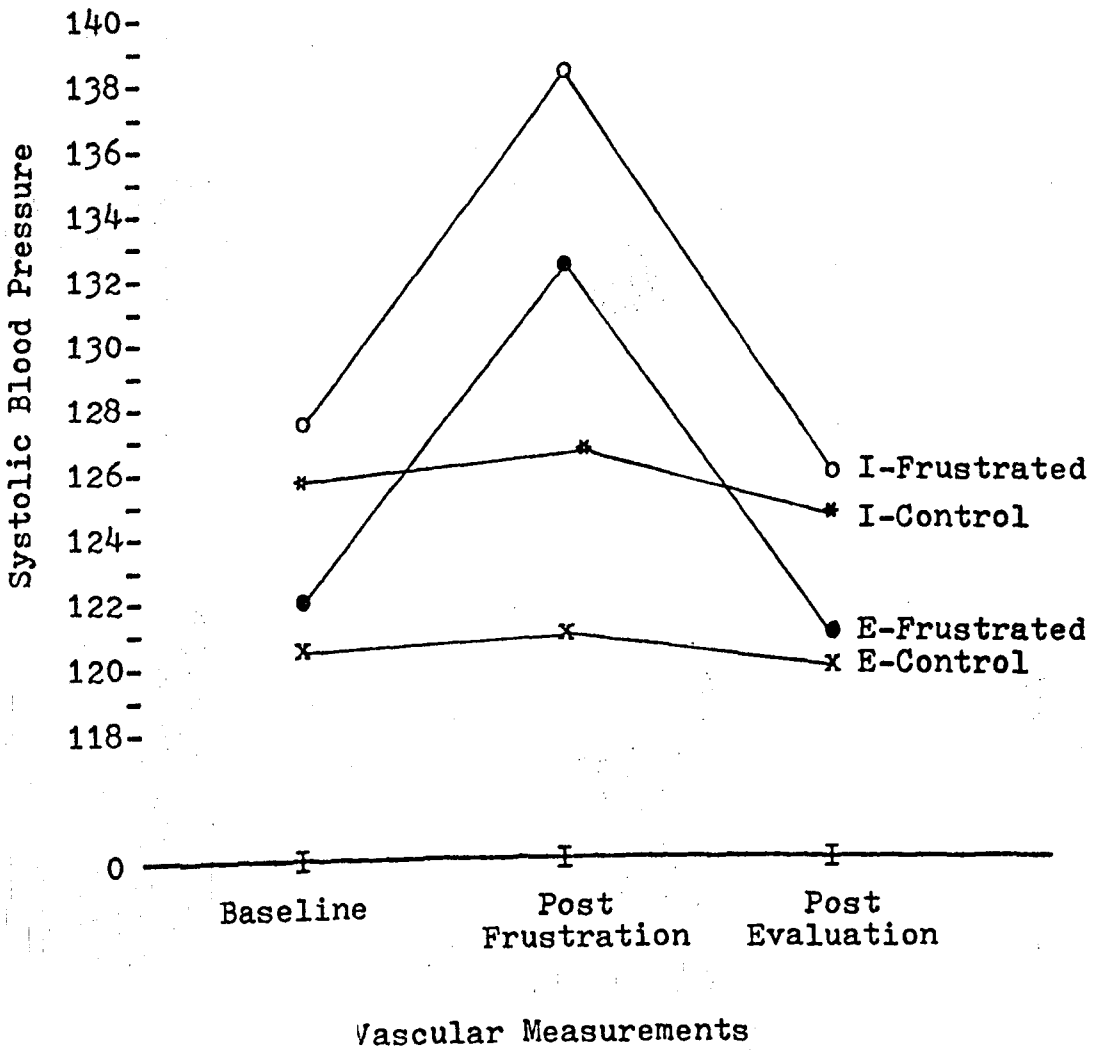


Figure 2

Vascular Measurements in Frustrated and Non-Frustrated Subjects (20 female internals; 20 female externals)

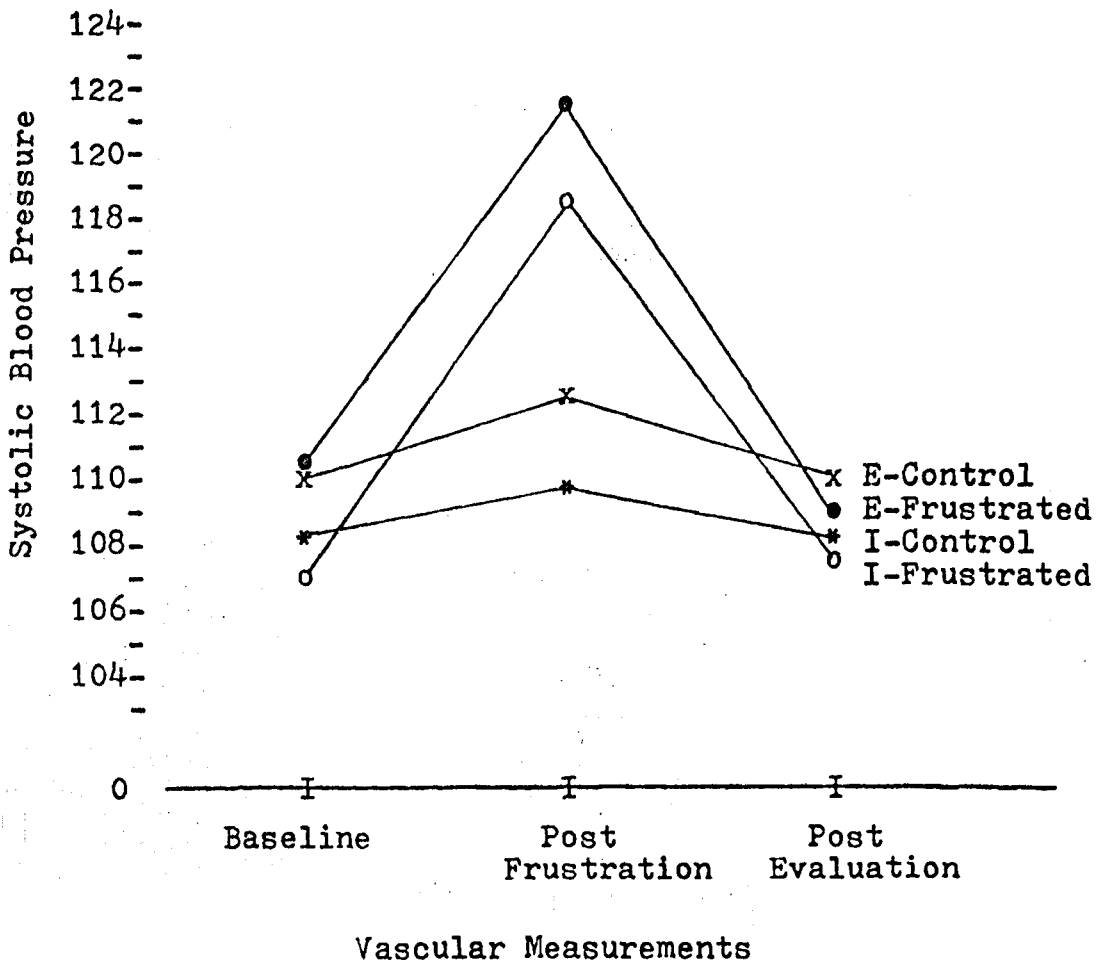
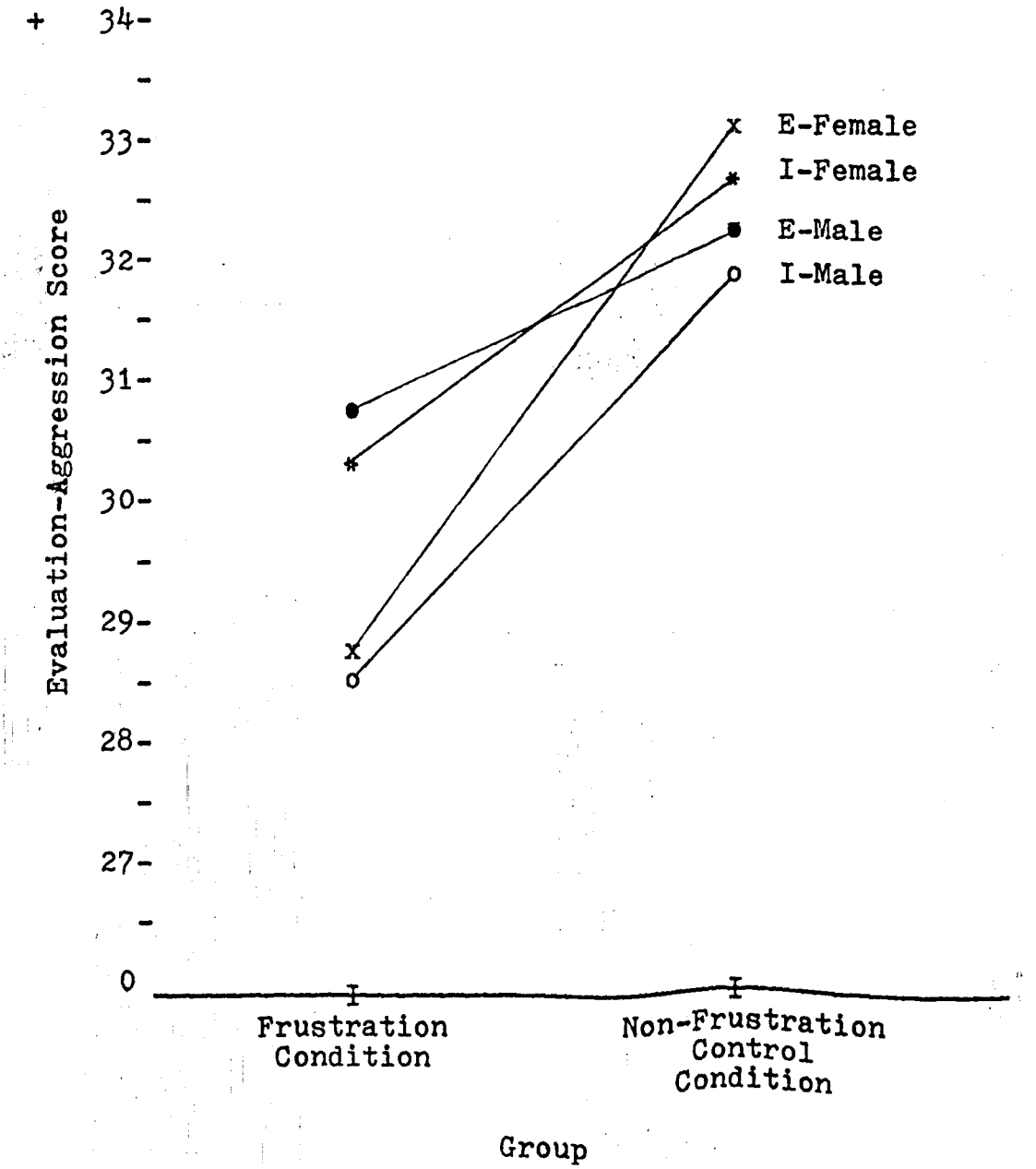


Figure 3

Evaluation-Aggression Scores (Group Means)



Appendix A

Informed Consent Form

The purpose of this experiment is to investigate individual differences in vascular levels (blood pressure) with respect to various tasks.

You will be required to do the following:

a.) Complete two questionnaires; one concerning personal beliefs you have, the other concerning a subjective description of yourself and your feelings.

b.) Complete one timed motor/mental task to the experimenter's satisfaction.

c.) Allow the experimenter to measure your systolic blood pressure at different intervals during the study. Four such measurements will be made.

d.) Evaluate the experimenter utilizing an evaluation form provided by the Department of Psychology.

All of the above responses will be held in the strictest of confidence. Your name will not appear on any of the response sheets, and you will be identified by a number for recording purposes. For your participation in this experiment, you will receive one hour credit toward the completion of the requirements for Introductory Psychology. Upon your request, you may terminate your participation at any time. All questions pertaining to the study will

be answered in a debriefing session immediately following the experiment.

I am aware of the requirements of this experiment and I volunteer to participate:

_____ _____

signature date

Please print:

_____ _____ _____

name. age sex

_____

professor

Appendix B

The Rotter Internal-External Locus of Control Scale

Directions: This is a questionnaire to find out the way in which certain events in our society affect different people. Each item consists of a pair of statements lettered a or b. Please select the one statement from each pair which you more strongly believe to be true. Do not select the one you think you should choose or the one you would like to be true, only the one you more strongly believe.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the ONE you more strongly believe. Try to respond to each item independently when making your choice; do not be influenced by your previous choices.

Since this is a measure of personal belief, there are obviously no right or wrong answers. Please answer each item carefully, not spending too much time on any one item. Be sure to find an answer to every choice.

I more strongly believe that:

1.____a. Children get into trouble because their parents punish them too much.

____b. The trouble with most children nowadays is that their parents are too easy with them.

2.____a. Many of the unhappy things in people's lives are partly due to bad luck.

____b. People's misfortunes result from the mistakes they make.

3.____a. One of the major reasons why we have wars is because people don't take enough interest in politics.

____b. There will always be wars, no matter how hard people try to prevent them.

4. ____a. In the long run people get the respect they deserve in this world.

____b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. ____a. The idea that teachers are unfair to students is nonsense.

____b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. ____a. Without the right breaks one cannot be an effective leader.

____b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. ____a. No matter how hard you try some people just don't like you.

____b. People who can't get others to like them don't understand how to get along with others.

8. ____a. Heredity plays the major role in determining one's personality.

____b. It is one's experiences in life which determine what they are like.

9. ____a. I have often found that what is going to happen will happen.

____b. Trusting to fate has never turned out as well for me as making a decision to take a definate course of action.

10.____a. in the case of the well-prepared student there is rarely if ever such thing as an unfair test.

____b. Many times exam questions tend to be so unrelated to coursework that studying is really useless.

11.____a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.

____b. Getting a good job depends mainly on being in the right place at the right time.

12.____a. The average citizen can have an influence in government decisions.

____b. This world is run by the few people in power, and there is not much the little guy can do about it.

13.____a. When I make plans, I am almost certain that I can make them work.

____b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14.____a. There are certain people who are just no good.

____b. There is some good in everybody.

15.____a. In my case, getting what I want has little or

nothing to do with luck.

____b. Many times we might just as well decide what to do by flipping a coin.

16.____a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

____b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

17.____a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

____b. By taking an active part in political and social affairs, the people can control world events.

18.____a. Most people can't realize the extent to which their lives are controlled by accidental happenings.

____b. There really is no such thing as "luck."

19.____a. One should always be willing to admit his mistakes.

____b. It is usually best to cover up one's mistakes.

20.____a. It is really hard to know whether or not a person really likes you.

____b. How many friends you have depends upon how nice a person you are.

21.____a. In the long run, the bad things that happen to

us are balanced by the good ones.

____b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22.____a. With enough effort, we can wipe out political corruption.

____b. It is difficult for people to have much control over the things politicians do in office.

23.____a. Sometimes I can't understand how teachers arrive at the grades they give.

____b. There is a direct connection between how hard I study and the grades I get.

24.____a. A good leader expects people to decide for themselves what they should do.

____b. A good leader makes it clear to everybody what their jobs are.

25.____a. Many times I feel that I have little influence over the things that happen to me.

____b. It is impossible for me to believe that chance or luck plays an important role in my life.

26.____a. People are lonely because they don't try to be friendly.

____b. There's not much use in trying too hard to please people; if they like you, they like you.

27.____a. There is too much emphasis on athletics in high school.

____b. Team sports are an excellent way to build character.

28.____a. What happens to me is my own doing.

____b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29.____a. Most of the time I can't understand why politicians behave the way they do.

____b. In the long run, the people are responsible for bad government on a national as well as on a local level.

The Rotter Internal-External Locus of Control Scale

Scoring Instructions

2A +1	16A +1
3B +1	17A +1
4B +1	18A +1
5B +1	20A +1
6A +1	21A +1
7A +1	22B +1
9A +1	23A +1
10B +1	25A +1
11B +1	26B +1
12B +1	28B +1
13B +1	29A +1
15B +1	

The Rotter Internal-External Locus of Control Scale (Rotter, 1966) is a 23-item forced choice questionnaire with six filler items. It is scored in the external direction.

Appendix C

Self-Evaluation Questionnaire

STAI Form X-2

Directions: A number of statements which people have used to describe themselves are given below. Read each statement and then check at the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	almost never	some-times	often	almost always
1. I feel pleasant				
2. I tire quickly				
3. I feel like crying				
4. I wish I could be as happy as others seem to be				
5. I am losing out on things because I can't make up my mind soon enough				
6. I feel rested				
7. I am "calm, cool and collected"				
8. I feel that difficulties are piling up so that I cannot overcome them				
9. I worry too much over something that really doesn't matter				
10. I am happy				
11. I am inclined to take things hard				
12. I lack self-confidence				
13. I feel secure				

	almost never	some-times	often	almost always
14. I try to avoid facing a crisis or difficulty				
15. I feel blue				
16. I am content				
17. Some unimportant thought runs through my mind and bothers me				
18. I take disappointments so keenly that I can't put them out of my mind				
19. I am a steady person				
20. I get in a state of tension or turmoil as I think over my recent concerns and interests				

Self-Evaluation Questionnaire

Scoring Instructions

	almost never	sometimes	often	almost always
1.	4	3	2	1
2.	1	2	3	4
3.	1	2	3	4
4.	1	2	3	4
5.	1	2	3	4
6.	4	3	2	1
7.	4	3	2	1
8.	1	2	3	4
9.	1	2	3	4
10.	4	3	2	1
11.	1	2	3	4
12.	1	2	3	4
13.	4	3	2	1
14.	1	2	3	4
15.	1	2	3	4
16.	4	3	2	1
17.	1	2	3	4
18.	1	2	3	4
19.	4	3	2	1
20.	1	2	3	4

The A-trait questionnaire (Spielberger, 1970) is a 20-item inventory scored in the direction of anxiety.

Appendix D

Experimenter Evaluation Form

Directions: The purpose of this form is to allow the student participating in studies within the Department of Psychology to adaquately evaluate the experimenter conducting research. The form not only allows experimental subjects the opportunity to respond to the quality of research being done within the department, but also provides the faculty with an objective measure to aid in the determination of a grade for the student experimenter. Therefore, it is important that the items are answered as truthful as possible.

Here is how to use these scales:

If you feel that the adjective very closely describes the experimenter conducting the study, you should place your check mark as follows:

fair __X__:____:____:____:____:____:____ unfair

or

fair ____:____:____:____:____:____:__X__ unfair

If you feel the adjective describes quite closely the experimenter conducting the study, you should place your check mark as follows:

strong ____:__X__:____:____:____:____:____ weak

or

strong ____:____:____:____:____:__X__:____ weak

If the adjective only slightly describes the experimenter conducting the study, then you should check as follows:

active ____:____:__X__:____:____:____:____ passive

or

active ____:____:____:____:__X__:____:____ passive

The direction toward which you check, of course, depends upon which of the two poles of the scale seem most characteristic of the experimenter you are evaluating.

If you consider the experimenter neutral on the scale, both sides of the scale equally associated, or if the scale is completely irrelevant, then you should place

your check mark in the middle space:

safe ____:____:____:_X_:____:____:____ dangerous

IMPORTANT: 1.) Place your check marks in the middle of the spaces not on the boundaries.
2.) Be sure you place one check mark on every scale--do not omit any.
3.) Never put more than one check mark on a single item.

Sometimes you may feel as though you have had the same item before on the form. This will not be the case, so do not look back and forth through the items. Make each item a separate and independent judgement. Do not worry or puzzle over individual items; it is your first impressions, the immediate feelings, that provide the best evaluation. Please do not be careless, because your true impressions are valuable in evaluating the experimenter conducting the study.

(Osgood, Suci & Tannenbaum, 1957)

Experimenter Evaluation Form

cautious	____:____:____:____:____:____:____	rash
skeptical	____:____:____:____:____:____:____	gullible
unrealistic	____:____:____:____:____:____:____	pragmatic
impulsive	____:____:____:____:____:____:____	self-controlled
lax	____:____:____:____:____:____:____	firm
cooperative	____:____:____:____:____:____:____	uncooperative
bold	____:____:____:____:____:____:____	timid
lethargic	____:____:____:____:____:____:____	alert
relaxed	____:____:____:____:____:____:____	tense
undiscriminating	____:____:____:____:____:____:____	selective
uninhibited	____:____:____:____:____:____:____	inhibited
conforming	____:____:____:____:____:____:____	individualistic
trusting	____:____:____:____:____:____:____	distrustful
open-minded	____:____:____:____:____:____:____	fanatical
idealistic	____:____:____:____:____:____:____	opportunistic
choosy	____:____:____:____:____:____:____	tolerant
severe	____:____:____:____:____:____:____	lenient
noncommital	____:____:____:____:____:____:____	committed

Experimenter Evaluation Form

Scoring Instructions

cautious	+ 9	+ 6	+3	0	-4	- 8	-12	rash
skeptical	+ 5	+ 3.3	+1.7	0	-4.7	- 9.3	-14	gullible
unrealistic	-12	- 8	-4	0	+3	+ 6	+ 9	pragmatic
impulsive	- 3	- 2	-1	0	+5.7	+11.3	+17	self-controlled
lax	- 9	- 6	-3	0	+4.3	+ 8.7	+13	firm
cooperative	+16	+10.7	+5.3	0	-6.7	-13.3	-20	uncooperative
bold	+11	+ 7.3	+3.7	0	-3.7	-7.3	-11	timid
lethargic	-17	-11.3	-5.7	0	+6.7	+13.3	+20	alert
relaxed	+18	+12	+6	0	-3.7	- 7.3	-11	tense
undiscriminating	-14	- 9.3	-4.7	0	+4.3	+ 8.7	+13	selective
uninhibited	+11	+ 7.3	+3.7	0	-4.7	- 9.3	-14	inhibited
conforming	-16	-10.7	-5.3	0	+6.7	+13.3	+20	individualistic
trusting	+11	+ 7.3	+3.7	0	-4.7	- 9.3	-14	distrustful
open-minded	+25	+16.7	+8.3	0	-8	-16	-24	fanatical
idealistic	+15	+10	+5	0	-2	- 4	- 6	opportunistic
choosy	- 5	- 3.3	-1.7	0	+8.3	+16.7	+25	tolerant
severe	-14	- 9.3	-4.7	0	+3	+ 6	+ 9	lenient
noncommital	- 8	- 5.3	-2.7	0	+2.7	+5.3	+ 8	committed

Responses are totaled and the aggressive response is scored in the negative direction. Average response determined by dividing by 18 (-13 to +15; range = 28).

Experimenter Evaluation Form

Scoring Instructions-Revised

cautious	33	30	26	23	19	16	12	rash
skeptical			(item thrown out)					gullible
unrealistic	12	16	19	23	26	30	33	pragmatic
impulsive	21	24	28	31	34	38	41	self controlled
lax			(item thrown out)					firm
cooperative	40	34	28	22	16	10	4	uncooperative
bold	35	31	28	24	20	17	13	timid
lethargic	7	13	19	26	32	38	44	alert
relaxed	42	37	32	28	23	18	13	tense
undiscriminating			(item thrown out)					selective
uninhibited	35	31	27	22	18	14	10	inhibited
conforming	8	14	20	26	32	38	44	individualistic
trusting	35	31	27	22	18	14	10	distrustful
open-minded	49	41	33	24	16	8	0	fanatical
idealistic	39	36	32	29	25	22	18	opportunistic
choosy	19	24	29	34	39	44	49	tolerant
severe	10	14	18	21	25	29	33	lenient
noncommital	16	19	21	24	27	29	32	committed

Responses are totaled and divided by 15 to obtain the average response (range = 27; 12-evaluation negative to 39-evaluation positive).

Appendix E

Validation of the Experimenter Evaluation Form

The Experimenter Evaluation Form is an eighteen item semantic differential scale designed to measure the aggressive response to frustration in the verbal mode. Previous studies (Hokanson & Burgess, 1962a, 1962b) have shown the equivalence of physical and verbal modes of expressing aggression. However, a standard valid questionnaire was not utilized in these early experiments. The present work, in its attempt to re-create a valid picture of the frustration-aggression phenomenon, has developed the Experimenter Evaluation Form.

The semantic differential scale was developed by Osgood, Suci and Tannenbaum (1957) in an attempt to measure attitudes and values quantitatively. In brief, a "semantic space" is postulated having a pair of polar adjectives situated on a straight line. The subject then represents his or her attitude, belief or value along the seven-point continuum. This allows an objective measure of distance and direction as well as intensity of the prevailing attitude. Several factor analytic studies have explored the major dimensions of this "semantic space". Results indicate the presence of three factors: 1.) evaluation--good versus bad; 2.) potency--strong versus weak; and 3.) activity--active versus passive. The evaluative

component was determined paramount as it accounted for more than half of the variance (Osgood, Suci & Tannenbaum, 1957).

The primary role of the evaluative factor was questioned by Peabody (1967) who suggested the existence of a confounding descriptive aspect of trait measurements. In rating 90 traits along favorable/unfavorable continuums, Peabody was able to separate the descriptive component from the evaluative component. Results indicate the primary importance of the descriptive factor , not the evaluative component. The importance of these descriptive features in the semantic differential was also delineated in a study using Peabody's balanced personality traits (Rosenberg & Olshan, 1970).

In short, Peabody has grouped major personality traits into balanced sets of four (see table 1E). Nine of these original sets make up the Experimenter Evaluation Form. Items were selected on the basis of content and ease of comprehension. Ratings of 40 judges serve as a measurement of intensity for the Experimenter Evaluation Form. Therefore, Peabody's work has been instrumental in providing the balanced sets of traits as well as the evaluative ratings.which make it possible to use this instrument as a measure of verbal aggression.

Method

Subjects: All Introductory Psychology students at the University of Richmond were administered the Rotter I-E Scale (see Appendix B). From this population (N=185), sixty-six students scoring in the intermediate range on the I-E Scale were selected as subjects for the validation of the Experimenter Evaluation Form. Thirty-two of these students (19 females; 13 males) actually participated in the study. Sixteen students made up the experimental group and the remaining 16 were placed in a control condition. Selection of group in which the students were placed was determined randomly.

Procedure: Subjects were brought to the experimental room individually and seated at a table with the experimenter. The subject is given the Informed Consent Form (Appendix A) and asked to read it thoroughly and sign it. After the subject hands the experimenter the signed consent form, a blood pressure cuff is attached to his or her non-dominant upper arm. A baseline reading of systolic blood pressure is obtained.

The subject is then read the following instructions:

> This is a task involving the measurement of your blood pressure during a motor/mental task. I am going to ask you to do something and I want you to complete it as quickly as you can. This task will be timed. Directly following this task I will be taking a blood pressure reading so please hold your arm still during this period. Do you have any ques-

tions? When I say go I want you to count backwards from one hundred by threes as quickly as you can. Ready? Go.

During this task the subject is interupted three times by the experimenter who offers negative feedback. The experimenter says: "That is not fast enough. Try again and this time really try to do it quickly"; "That is the slowest time yet. You're going to have to start over."; and "Its still far below the average time. I guess you'll never get it fast enough. We will just have to go on after I get this reading." A second reading of systolic blood pressure is then obtained.

The students in the experimental group then receive the Experimenter Evaluation Form and instructions to complete it as honestly as possible as it will be used to determine the grade of the experimenter (Appendix D). The experimenter leaves the room allowing the subject to complete the evaluation in confidence. He returns after the evaluation has been completed and obtains a final reading of systolic blood pressure. The control group completes the A-Trait Questionnaire (Appendix C) rather than the Experimenter Evaluation Form and likewise calls the experimenter to obtain the final reading of systolic pressure.

After the final reading has been recorded the blood pressure cuff is taken off and the subject is debriefed

using the procedure outlined in Appendix F.

Results

The results were analyzed through a 2 X 3 Analysis of Variance (ANOVA) with one factor being the group (experimental/control) and the other being the repeated measures of systolic blood pressure. Homogeneity of variance was demonstrated through the F_{max} ratio of 1.50 which is not significant at the .05 confidence level (F_{max} .05 = 1.67; df = 48/2).

The results of the ANOVA depict a significant interaction at the .05 level of confidence (see Table 2E and Figure 1E). Analysis of simple effects demonstrate no significant differences when split across vascular measurements (see Table 3E, 4E and 5E). When split across groups however, significant differences in vascular measurements can be found at the .05 level of confidence (see Table 6E and 7E). A Newman-Keuls' analysis on these significant differences delineates a clearer understanding of the interaction. There exist significant differences between baseline and frustration levels of systolic pressure for both groups as well as between frustration and post-aggression levels in systolic pressure. There is a significant difference (.05) between baseline and final readings for the control group. This difference for the experimental group is not significant, which suggests

the Experimenter Evaluation Form allows the subject to lower his or her blood pressure to pre-frustration levels. The Newman-Keuls' Analysis is depicted in Table 8E and 9E.

No data analysis was performed on the A-Trait Questionnaire, but the scores were saved to be added into the regression analysis of the major study. The scores from the Experimenter Evaluation Form (N = 16) had a mean of 5.4 with a standard deviation of 3.12. No analysis was done with this data due to the limited number of subjects and the narrow range of subject differences with respect to the personality dimension, locus of control.

Discussion

In concordance with the studies by Hokanson and Burgess (1962a, 1962b), the present work has shown that a questionnaire, a verbal measure of aggression, has cathartic properties. Even more important, however, is the objectivity of the Experimenter Evaluation Form. It allows the experimenter to obtain a valid quantitative measurement of the subjects response to the frustrating task. The argument presented by Peabody (1967) concerning the descriptive factor within the semantic differential has provided the basis for the Experimenter Evaluation Form, but of little relevant interest to its utilization. Whether the form is used as a descriptive tool or an evaluative instrument, its real purpose allows the

individual to cope with frustrating circumstances in a positive way.

Of interest to the primary study, the individual scores on the Experimenter Evaluation Form were shown to range from .6 to 11.0 which indicates a very narrow degree of variability. Using an alternative equal interval scoring system, however, similar results were obtained. In general, the subjects were utilizing the evaluation as an instrument to reduce their frustration not necessarily expressing aggression toward the frustrator. Also of interest is that a subject can reduce his or her systolic pressure to pre-frustration levels by evaluating the experimenter negatively (.6) or positively (11.0). This presents the issue of individual differences which will be investigated more closely in the major study. The degree of variability will also be discussed in the major study, as it may indicate a flaw in the scoring system or the form itself.

From a critical perspective, the design could exclude experimenter bias by introducing a third person to make the blood pressure measurements. The time taken to fill out the questionnaire could be standardized by taking the vascular measurements at fixed intervals. In replication these methodological issues should be looked at more closely.

Overall, the Experimenter Evaluation Form is a loosely-researched questionnaire that has been shown to be effective in coping with frustrating circumstances. A subject who has been frustrated by an experimenter and subsequently allowed to evaluate him can reduce the physiological manifestations of anxiety caused by the frustration. This is of critical importance to the primary study which investigates the utility of this instrument further.

Table 1E

Sets of Trait Terms Selected and their Evaluative Ratings

		Temperament		
1.	+ .9	Cautious	+1.1	Bold
	-1.1	Timid	-1.2	Rash
2.	+1.7	Self-Controlled	+1.1	Uninhibited
	-1.4	Inhibited	- .3	Impulsive
3.	+1.3	Serious	+1.5	Gay
	-1.6	Grim	-1.2	Frivolous
4.	+2.0	Alert	+1.8	Relaxed
	-1.1	Tense	-1.7	Lethargic
5.	+ .8	Committed	+2.5	Open-minded
	-2.4	Fanatical	- .8	Noncommital
6.	+1.3	Steady	+1.6	Flexible
	-2.1	Inflexible	-1.5	Vacillating
7.	+2.0	Modest	+1.3	Confident
	-1.1	Self-Disparaging	-2.0	Conceited
		Social		
8.	+ .9	Thrifty	+1.8	Generous
	-2.0	Stingy	- .8	Extravagent
9.	+ .5	Skeptical	+1.1	Trusting
	-1.4	Distrustful	-1.4	Gullible
10.	+1.3	Selective	+2.5	Tolerant
	- .5	Choosy	-1.4	Undiscriminating
11.	+1.3	Firm	+ .9	Lenient
	-1.4	Severe	- .9	Lax
12.	+1.3	Discreet	+1.8	Frank
	-1.2	Secretive	-1.4	Indiscreet
13.	+2.0	Individualistic	+1.6	Cooperative
	-2.0	Uncooperative	-1.6	Conforming
		Ideas and ability		
14.	+ .9	Pragmatic	+1.5	Idealistic
	- .6	Opportunistic	-1.2	Unrealistic
15.	+1.6	Cultivated	+2.1	Natural
	-2.2	Artificial	- .7	Naive

The evaluative ratings were determined by 40 judges' ratings on a favorability (+3) to unfavorability (-3) continuum (Peabody, 1967).

Table 2E

Group by Vascular Measurements--Analysis of Variance

Summary Table:

Source	df	SS	MS	F	p
Between:					
Group	1	0	0	0	n.s.
Subjects(error)	30	6850.3	228.34		
Within:					
Vascular Measurements	2	735.6	367.8	43.68	.05
Measurements by Group	2	172.8	86.4	10.26	.05
Measurements by Subjects(error)	60	505.2	8.42		

$F_{.95} = 3.15$ (df = 2/60)

Experimental Group/Control Group at Baseline Measurement

Simple Effects Summary Table 3E

Source	df	SS	MS	F	p
Between:					
Group	1	15.13	15.13	.18	n.s.
Subjects (error)	30	2475.75	82.53		

Experimental Group/Control Group at Frustration Measure

Simple Effects Summary Table 4E

Source	df	SS	MS	F	p
Between:					
Group	1	45.13	45.13	.56	n.s.
Subjects (error)	30	2420.75	80.69		

Experimental Group/Control Group at Final Measurement

Simple Effects Summary Table 5E

Source	df	SS	MS	F	p
Between:					
Group	1	112.5	112.5	1.37	n.s.
Subjects (error)	30	2459	81.97		

$F_{.95} = 4.17$ (df = 1/30)

Table 6E

Vascular Measurements in the Experimental Group

Simple Effects Summary Table

Source	df	SS	MS	F	p
Between:					
Subjects (error)	15	4123.89	274.93		
Within:					
Measurements	2	625.17	312.59	45.33	.05
Measurements by Subjects (error)	30	206.86	6.90		

Table 7E

Vascular Measurements in the Control Group

Simple Effects Summary Table

Source	df	SS	MS	F	p
Between:					
Subjects (error)	15	2726.35	181.76		
Within:					
Measurements	2	283.17	141.59	14.23	.05
Measurements by Subjects (error)	30	298.4	9.95		

$F_{.95} = 3.32$ (df = 2/30)

Table 8E

Newman Keuls' Analysis on the Experimental Group

Vascular Measurement		3	1	2	
		115.5	116.825	123.75	
3	115.5		1.325 n.s.	8.25	.05
1	116.825			6.925	.05
2	123.75				

Table 9E

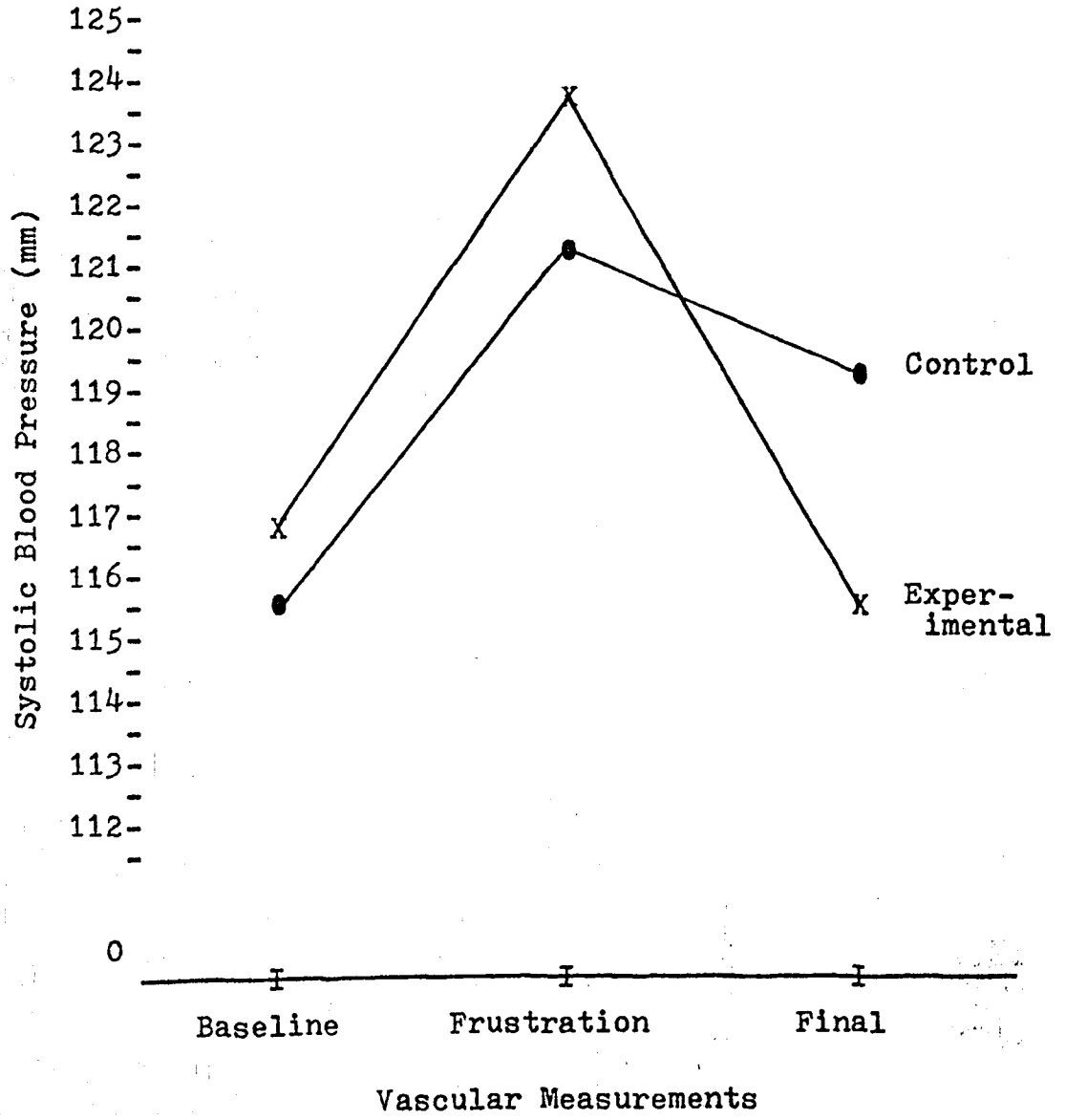
Newman Keuls' Analysis on the Control Group

Vascular Measurement		1	3	2	
		115.5	119.25	121.375	
1	115.5		2.125	.05 5.875	.05
3	119.25			3.75	.05
2	121.375				

critical value $_{.95}$ = 1.90 (df = 2/30)
= 2.29 (df = 3/30)

Figure 1E

Groups by Vascular Measurement Analysis of Variance



Appendix F

Debriefing Procedure

The following points are explained completely to the subject following the completion of the experimental session:

1.) The method of selection of subjects and the use of the Rotter I-E Scale.

2.) The manipulation of the experimenter and his attempts to frustrate the subject. The subject is told that all subjects receive the same condition of frustration and the statements made by the experimenter were also part of the frustration.

3.) The real purpose of the Experimenter Evaluation Form is revealed and explained.

4.) The hypotheses of the experimenter are presented to give a better understanding of the purpose of the study.

5.) The subject is asked not to reveal any information about the study to anyone else, due to the nature of the experiment.

6.) The subject is asked if he or she has any questions about the study. All questions are answered to the best of the experimenter's ability.

7.) The subject is thanked for his or her cooperation.