

Type A Behavior Pattern, Frustration and Aggression

by

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Abstract

Experimental studies have shown Type A Behavior Pattern individuals to be more aggressive than Type B's. The primary purpose of this study was to examine whether increased frustration in response to task failure offers a partial explanation for Type A individual's higher levels of aggression. The study examined the influence of Task Load, Sex and Behavior Pattern on Frustration and Aggression. There were 86 subjects, 38 males and 48 females, from the Introductory Psychology Subject Pool. Type A subjects were those who scored 8 or greater on the Jenkins Activity Survey Form T. There were 2 Task Load levels; 5 and 25 problem conditions. The degree of task failure was greater in the 25 problem condition. Degree of frustration was obtained through self-report and aggression was measured by a questionnaire rating the experimenter. Type A's were found to become both more frustrated and aggressive in the 25 problem condition than in the 5 problem condition. Clinical ramifications of these findings are discussed.

Acknowledgements

To those students who participated in the study I express my appreciation. I would also like to express my appreciation to Dr. Ken Rotenberg for being the second reader and to Dr. B. Kent Houston for consenting to be the external examiner. To Dr. John Jamieson, my thesis supervisor, a special "THANKS JJ" for all your contributions to the cause. In addition a hearty thanks to all those who made the past few years an enjoyable experience.

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In North America heart disease is the major cause of death (Sexton 1979). Type A Behavior Pattern is an independent risk factor for Coronary Heart Disease (CHD) (Rosenman and Chesney 1982). Chesney, Eagleston and Rosenman (1981) suggest two strategies for the modification of Type A behavior. One is the shotgun approach: modification is attempted for all facets of Type A behavior with the hope that one changes the characteristics which are related to increased CHD risk. This attempt at global change has disadvantages in that all TABP characteristics might not be related to increased CHD risk and some Type A characteristics are beneficial to career success. An alternative strategy is to identify the Type A characteristic(s) which is (are) causally related to CHD.

Rosenman and Chesney (1982) identified hostility in TABP individuals as a target for modification. Diamond (1982) in a review concludes that the hostility component of the TABP is predictive of CHD. Jenkins (1978a) identifies the tendency towards aggression as the best known behavioral predictor of CHD. Before attempting the modification of aggression in Type A's the phenomenon should be investigated further. The primary purpose of this study is to examine whether frustration is related to increased aggression in Type A's.

Type A Behavior Pattern (TABP)

Type A Behavior Pattern (TABP) is an overt behavior pattern characterized by time urgency, job involvement, competitiveness and aggressiveness. Type B Behavior Pattern is the antithesis of TABP and is defined as the relative absence of TABP characteristics. "TABP is an overt behavioral syndrome or style of living, characterized by enhanced competitiveness, striving for achievement, aggressiveness which may be strongly repressed, impatience, restlessness, hyperalertness, tenseness of facial musculature, explosive speech stylistics and a chronic sense of time urgency that leads to the acceleration of thought and action. "(p.5 Rosenman and Chesney, 1982).

Recent epidemiological studies have added TABP to the list of traditional risk factors for CHD: high blood pressure, smoking, obesity, cholesterol, family history and diabetes (Rosenman, Brand, Jenkins, Friedman, Strauss and Wurm, 1975) TABP has been significantly associated with CHD in men and women and is an independent risk factor for CHD. Individuals with TABP are at twice the risk Type B's are for CHD. TABP is also positively correlated with other CHD risk factors such as smoking and cholesterol (Rosenman and Chesney, 1982).

In a recent review with a psychological perspective, Matthews (1982) confirmed that TABP individuals are competitive, aggressive and achievement oriented. Relative to Type B individuals, A's perform better when

fatigued, distracted and after a brief salient failure while B's perform better than A's on tasks that require slow and careful responses, a broad focus of attention and after a prolonged salient failure. TABP individuals report that they work hard: undergraduate A's study longer and sleep less than B's. Psychophysiological studies reveal that A's respond with heightened sympathetic activity to competition.

Assessment of Type A Behavior Pattern

The Structured Interview (SI) and the Jenkins Activity Survey (JAS) have been prospectively related to CHD and are the most commonly used measures of assessing TABP (Jenkins, Rosenman and Zyzanski, 1974 and Rosenman et. al. , 1975). In the Structured Interview (SI) , individuals are queried with regard to their characteristic manner of responding to a variety of situations (Rosenman 1978). The questions are designed to elicit impatience, hostility and competitiveness from TABP individuals. The classification is based on the self-reports and speech characteristics of the subject and the clinical judgement of the interviewer. The speech behaviors are heavily weighted: A's characteristically speak quickly, loudly and interrupt during the interview. Individuals are assigned to one of four categories: A1 fully developed TABP, A2 toned down TABP, X equal proportions of A and B characteristics and B which is the antithesis of TABP. The SI has demonstrated test-retest and inter-rater reliability and predictive

validity.

The Jenkins Activity Survey (JAS) is a self-report measure of TABP with questions similiar in content to the questions in the SI. The JAS was developed to be an objective psychometric instrument to be used in the assessment of TABP. The JAS provides an overall measure of overt behavior pattern and separate scores for 3 components of TABP: speed and impatience, job involvement and competitiveness(Jenkins, Zyzanski and Rosenman 1971). The JAS has demonstrated test-retest reliability and predictive validity (Jenkins 1978b).

Matthews, Krantz, Dembroski and MacDougall (1982) examined the common and unique sources of variance in the SI and the JAS. The two measures common sources of variance appear to be self-reported pressured drive and hostility, energy level and competitiveness. The unique source of variance for the JAS is self-reported time pressure and for the SI it is speech behavior. The correlations between the JAS and SI were low and it appears the different measures are measuring different aspects of the same construct. The authors caveat is the JAS and SI should not be used as interchangeable measures of TABP.

The original JAS was designed for working adults. The JAS Form T was designed for university students and is similiar to the version used in prospective studies except that items concerning job involvement are deleted (Krantz, Glass, and Snyder 1974). Palladino and Tryon (1980) did not

find sex differences or differences between urban and rural students with the JAS Form T.

The Frustration-Aggression Hypothesis

In social psychology aggression is operationally defined as an act done primarily to hurt some person or object. Instances of aggression can differ in the degree that they are provocation motivated. Aggression that is motivated primarily by anger is referred to as hostile aggression. Aggression where the primary aim is the acquisition of something is labelled as instrumental (Baron 1977).

The Frustration-Aggression Hypothesis as proposed by Dollard, Doob, Miller, Mowrer and Sears (1939) holds that the occurrence of aggressive behavior always presupposes the existence of frustration and that the converse was also true: frustration leads to aggression whether overt or covert. Frustration is defined as the thwarting of a goal orientated behavior(task failure and omission of reward). Berkowitz (1969) suggested a Revised Frustration-Aggression Hypothesis that emphasizes the interaction between environmental cues and the internal emotional state. Frustration is seen as creating a readiness for aggression while cuing stimuli elicit the aggressive response.

The Attributional perspective on aggression contends the expression of aggression is mediated by the perceiver's attributions of the harm doer's behavior. Mitigating circumstances such as the perceiver's attributions of

causality, justification and motives affect the expression of aggression. Frustration results in greater subsequent aggression if perceived as intentional, foreseeable and unexpected (Ferguson and Rule 1983).

Geen (1968) demonstrated that frustration induced by task failure facilitated aggression. Subjects failed to complete an insoluble puzzle within a time limit and subsequently administered shocks of a greater intensity than controls. Frustration occurs daily in our lives: cars which will not start, red tape and missing short putts are representative of the many possible sources of frustration to which we are subject. Given the right situation frustration generated from such instances will lead to aggression. Since the participants in this study are students the source of frustration and the aggression stimulus will be tailored to this population. In this study task failure will be the means by which frustration is induced and the stimulus cue for aggression will be the opportunity to evaluate the experimenter.

Attributional Perspective on Anger and Aggression

Anger is also one possible response to a frustration manipulation (Zurawski and Houston 1983). Anger is a subjective emotional state which is a function of physiological arousal and the labelling of the arousal. Experimental manipulations such as exercise, erotic films, noise and drugs produce physiological arousal which may be labelled as anger depending on the subject's attributions

(Stonner 1976). The degree of anger depends less on the magnitude of the noxious stimuli and more on the attributions of the subjects. Personal attributions such as the degree to which the stimuli were intentional, foreseeable and socially unacceptable will result in greater anger than if situational attributions are formulated. Greater levels of anger increase the likelihood of subsequent expression of hostile aggression (Ferguson and Rule 1983). Since anger is one mediator of aggression the subject's degree of self-reported anger will be measured.

Experimental Measures of Aggression

In laboratory studies of aggression several different types of dependent measures have been employed: Play, Safe Attacks, Direct Physical Aggression and Verbal. The "Bobo Doll" studies of Bandura, Ross and Ross (1963A and 1963B) are examples of the use of Play measures of aggression. In these studies the effects of modelling on subsequent aggressive behavior in children were examined. The dependent measure was the number of aggressive acts against the bobo doll.

Deiner (1976) and Deiner, Dineen and Endresen (1975) in studying the effects of modelling and deindividuation on aggression used Safe Attacks as their dependent variable. Aggression scores were determined by assigning a certain value to particular aggressive behaviors and totalling the values after a time period. For example, subjects were

allowed to hit the victim with a toy sword, shoot them with a toy gun or to actually physically aggress against the passive victim.

The most common techniques for measuring aggression are Direct measures of aggression. Subjects are usually deceived into thinking that they can deliver actual shocks to the victim. Shock intensity, duration and frequency have been employed as dependent measures. Berkowitz (1965) in examining the effects of modelling on the frustration-aggression relationship used number of shocks as the dependent measure of elicited aggression.

With Verbal measures of aggression the subject completes a questionnaire evaluating another individual, usually the experimenter. Zillmann and Cantor (1976) had subjects evaluate an obnoxious experimenter and demonstrated that subjects are willing to be aggressive. Subjects completed the "confidential" questionnaire at the conclusion of the experiment. Questions 1, 2 and 3 allowed the subjects to register any complaints and questions 4, 5 and 6 permitted them to influence the experimenter's future. Negative evaluations on questions 4, 5 and 6 were considered to be acts of aggression.

If subjects think their evaluations will have no effect on the victim can their responses be labelled aggression? With verbal measures subjects must think their evaluations can actually harm the victim to call the responses aggression. This experimental manipulation is not

usually but should be checked because without this check one would be assuming aggression is being measured without being certain (Baron 1977).

Baron (1977) feels that verbal measures have the advantage of easy quantification of results. Another advantage is verbal aggression is quite common in everyday life thus providing a familiar mode of expressing aggression. In the present investigation the summation of items 4, 5 and 6 from the Zillman and Cantor (1976) questionnaire was the dependent measure of aggression. An additional item was included as an aggression check as recommended by Baron (1977).

TABP and Aggression

Recent findings suggest that the hostility component of TABP is predictive of CHD (Diamond 1982). Matthews, Glass, Rosenman and Bortner (1977) in a factor analysis of the data from the Western Collaborative Group Study found items best predictive of CHD pertained to hostility and to irritation in response to frustration.

Van Egeren (1979) in a study of communication patterns found A's elicited more aggression from partners. Van Egeren, Sniderman and Roggelin (1982) again using the mixed-motive game found A's to be more aggressive than B's. Van Egeren, Abelson and Sniderman (1983) also found that with a computer simulated partner A's reacted more aggressively than B's in the mixed-motive game. Level of aggression was ascertained by an analysis of the social

interactions and intersubject communications. Type A behavior classification was based on the JAS Form T and only extreme A's and B's were used.

Carver and Glass (1978) examined the influence of Type A behavior pattern on interpersonal aggression. Subjects were males in the upper and lower thirds of the AB distribution derived from scores on the JAS Form T. There were 3 experimental conditions: control, frustration and frustration/instigation. The frustration manipulation was a complex puzzle that could not be completed in the allotted 3 minute time period. Instigation was verbal beratement by the confederate. The dependent measure was the mean shock intensity delivered to the confederate in a teacher/learner paradigm. The subject had to deliver a shock for every mistake, however intensity was under their control. Type A's reacted with more aggression under the frustration and frustration/instigation conditions than in the control condition. The AB difference was only significant in the frustration condition. For Type B's level of aggression was not significantly different over the 3 conditions.

It has been demonstrated that A's respond to competition (Van Egeren et. al. 1982 and Van Egeren et. al. 1983) and task failure (Carver and Glass 1978) with increased levels of aggression. Since A's have been shown to respond to certain situations more aggressively than B's the logical progression of the research is to examine the

reason why. The identification of the mechanism(s) by which A's come to react with increased aggression would be of benefit when attempting the modification of aggressive behaviors in Type A's.

It was postulated by Carver and Glass (1978) that the AB difference in aggression in response to task induced frustration was a result of the Type A individual's attempt to gain and maintain control over their immediate environment. Frustration is seen as a threat to the Type A individual's control and in order to regain control Type A's become aggressive. Carver and Glass (1978) proposed the increased aggression of Type A's was instrumental in nature.

Differences in anger and frustration levels of A's and B's in response to frustration manipulations might be other probable causes of the increased aggressive behavior of A's. Zurawski and Houston (1983) examined the self-reports of anger of A's and B's in response to a frustration manipulation. An overall increase in anger in response to the frustration manipulation was found and there were no AB differences. Type A's did not react to failure with greater self-reported anger than B's. In addition subjects were shown to become physiologically aroused in response to the frustration manipulation; however, again no significant reliable AB differences were found.

An alternative explanation of the AB difference in aggression levels reported by Carver and Glass (1978) is

that Type A's with respect to B's reacted to task failure with increased levels of frustration. The Frustration-Aggression Hypothesis leads to the proposition that increased aggression in Type A's was due to the increased levels of perceived frustration. Frustration is seen as a mechanism which can partially account for increased aggression in Type A's. The purpose of the present investigation was to examine if increased frustration in response to task failure was a possible cause of increased aggression in Type A's. Increases in aggression should be accompanied by increases in frustration levels.

The Present Study

The effect of different levels of Task Load on frustration and aggression in Type A individuals was examined. Subjects were dichotomized within the sexes into A's and B's in order to examine the influence of Behavior Pattern. The Task Load factor had two levels; 5 and 25 problems. The subjects answered all the questions in the 5 problem condition while in the 25 problem condition it was not possible to satisfactorily attempt any more than half the questions. Task failure, one cause of frustration, was more salient in the 25 problem condition. The experimental design allows for the examination of possible sex differences.

The study was conducted with small groups in a classroom setting. Subjects completed the JAS Form T, then

participated in one of the Task Load conditions and subsequently completed a measure of their subjective state within which was contained the measures of perceived frustration and anger. Subjects were told the study was completed and they were asked to complete the Researcher Evaluation Package within which was the aggression measure.

Type A individuals were expected to respond with increased levels of aggression in the High Task Load condition relative to the Low. Corresponding with this hypothesis was the expectation that A's would also report greater levels of frustration in the High Task Load condition relative to the Low. AB differences were expected for both frustration and aggression in the High Task Load condition.

METHOD

Subjects

Eighty-six full time students from the Introductory Psychology Subject Pool participated in the study. There were 38 males and 48 females ranging in age from 18 to 25. All subjects participated with the understanding that they would receive a bonus mark. One subject claimed to be aware of the deception post hoc and was not included in the analysis.

Experimental Design

The experimental design was a 2x2x2 factorial with one manipulated variable and two concomitant variables. Task Load had two levels, 5 and 25 problem conditions. Subjects were dichotomized into A's and B's on the basis of their scores on the JAS Form T. Following the precedent of other researchers subjects with AB scores of 8 or greater were considered to be Type A's and those with scores less than 8 Type B's (Zurawski and Houston 1983). There were 38 A's and 48 B's. Sex of subject was the third factor (Table 1).

TABLE 1: EXPERIMENTAL DESIGN

TASK LOAD	5 Q's		25 Q's	
BEHAVIOR PATTERN	A	B	A	B
FEMALES	11	11	15	11
MALES	6	6	6	20

Apparatus and Measures

The JAS Form T was utilized to determine AB scores. This instrument is widely used for this purpose in similiar studies (Carver and Glass 1978, Zurawski and Houston 1983)(Appendix A).

Questions from the Analytical Section of the Graduate Record Examination (GRE) were used in the Task Load manipulation (Brownstein and Weiner 1981). There were 5 problems in one condition and an additional 20 for a total of 25 in the other (Appendix B).

A questionnaire comprised of nine items was used to measure the subjects subjective state following the Task Load manipulation. Items 3 and 4 measuring perceived frustration and anger levels are of primary interest. Other items measured interest ,concentration, impatience, difficulty, pleasure, time pressure and boredom. Responses for all items could be not at all, somewhat, moderately or very much so (Appendix C).

The Researcher Evaluation Package included the Zillman and Cantor (1976) aggression measure. The aggression score was the summation of items 4, 5 and 6. These items allowed the subjects to rate the experimenter on performance as an experimenter, manner of interaction and whether further employment should be offered. A single item as suggested by Baron (1977) to determine if it is indeed aggression being measured was included. The subjects were queried as to whether they felt the overall opinions of the participants

would influence the evaluation of the experimenter
(Appendix D).

Procedure

Subjects were recruited from Introductory Psychology classes by the experimenter with the explanation that the purpose of the study was to determine how individuals of differing personality types reacted to complex cognitive tasks. The subjects would have to fill out some questionnaires, answer some word problems and inside of an hour they would be finished.

The study was conducted with small groups in a classroom setting. Upon arrival the subjects completed the JAS Form T. Subjects were then given questions from the GRE study guide: 5 in one condition and 25 in the other Task Load condition. Both groups were told that they should be able to complete the questions given them in the 20 minutes allotted and that their goal should be to satisfactorily complete all the questions. Subjects then worked on the problems for 20 minutes. Those subjects in the 5 Question condition who finished early were told to review their answers, no subjects in the 25 Question condition finished early.

The subjects next completed a questionnaire regarding their subjective state. Upon completion of the questionnaire the subjects were told that the experiment was over and they were thanked for their participation; however, if they could just do one more task.

The experimenter then handed out the Researcher Evaluation Package explaining that it is used by the

professor to help evaluate him. It was pointed out to the students that the experimenter was a student of Dr. Jamieson's and that he took their evaluations seriously. This letter was then read to the class: "Thank-you for taking part in this experiment. It is my practice always to obtain the views of each subject following any experiment which I am supervising. Your views may enable me to detect possible weaknesses in the experiment and will provide a basis for evaluating the experimenter, especially in the case where I must submit a grade for his research. Please answer the following questions and seal the questionnaire in an envelope addressed to me. Your cooperation is appreciated. Yours Truly, J.Jamieson, Ph.D." The subjects then completed the questionnaire and sealed it in an envelope. When all subjects had completed this task they were asked to write their names on the envelope. The experimenter then debriefed the subjects, explaining why deception was necessary, the rationale and hypotheses of the study and answering any questions the subjects had.

The dependent variables of interest were task failure, aggression, perceived frustration and perceived anger. The experimenter was blind of the AB score when determining individual scores for the dependent measures. Degree of task failure was determined by measuring the actual task performance and then subtracting from 100. In the 5 problem condition each correct answer was worth 20 and every wrong answer (-4). In the 25 problem condition

each correct answer was worth 4 and each wrong answer (-0.8). The measure of aggression was the summation of items 4, 5, 6 on the experimenter evaluation form. For each item the line was divided into 20 equal parts 0,5,10...100 and subjects received the score closest to their actual mark. The frustration and anger scores were obtained from single items imbedded in the Subjective State Questionnaire. The questions asked how frustrated and angered the subjects perceived themselves to be and the subjects responded with a number between 1 and 4 with higher numbers indicating greater degrees of frustration and anger.

Results

AB Scores:

The overall mean AB score on the JAS Form T was 6.907 with a standard deviation of 3.082. Individuals with an AB score of 8 or greater were classified as Type A's, B's had AB scores less than 8. Mean AB scores for each of the groups are presented in Table 2. A 2x2x2 Task Load x Sex x Behavior Pattern Anova revealed no significant differences between the experimental cells in AB score, except for the effect of Behavior Pattern, $F(1,85)=198.017$, $p<0.001$ (Appendix E).

TABLE 2: AB MEAN SCORES FOR EXPERIMENTAL GROUPS

TASK LOAD	5 Q's		25 Q's	
	A	B	A	B
BEHAVIOR PATTERN				
FEMALES	9.73	4.73	10.00	4.64
MALES	9.83	5.33	9.67	4.25

Task Performance:

Since the effect of varying task load was expected to result in more task failure in the 25 problem condition than in the 5 problem condition, a measure of the percentage of the task not successfully completed was obtained for each subject as an index of degree of task failure. In the 5 problem condition the mean task failure score was 61.47 and in the 25 problem condition the mean task failure score was 83.27. A 2x2x2 Task Load x Sex x Behavior Pattern Anova resulted in a significant main

effect of Task Load, $F(1,85)=43.048$, $p<0.001$ (Appendix F). The experimental manipulation of varying task load was successful in producing a greater degree of task failure in the 25 problem condition.

Frustration:

The task load manipulation was designed to elicit frustration as a result of task failure. The present study focused on how Type A's would respond to the High Task Load condition and if their responses were different from the Type B's in the high task load condition. In order to test the hypotheses a $2 \times 2 \times 2$ Task Load x Sex x Behavior Pattern anova was performed. There was a significant effect of Task Load on frustration: frustration was less in the 5 problem condition with a mean of 1.97 than in the 25 problem condition with a mean of 2.67, $F(1,85)=10.592$, $p<0.002$ (Appendix G). The Task Load x Behavior Pattern interaction was not significant, $F(1,85)=0.562$, $p<0.456$. However, because of apriori expectation that A's would react with greater frustration in the High Task Load (HTL) condition, a simple effects analysis for Task Load and Behavior Pattern was conducted (Table 3)(Howell 1982). It was expected that Type A's would be more frustrated in the HTL condition than in the Low and this was supported, $F(1,82)=8.73$, $p<0.005$). Type B's level of frustration did not vary over the Task Load conditions ($F(1,82)=2.04$, $p<0.15$). The means are plotted on Figure 1 and the increased frustration of the Type A

subjects in the HTL condition is apparent. Contrary to what was expected A's and B's did not significantly vary in their reported frustration levels in the HTL condition, $F(1,82)=1.68, p<0.20$. In the LTL condition A's and B's also did not significantly differ in their frustration levels, $F(1,82)=0.23, p<ns$.

TABLE 3

SIMPLE EFFECTS for TASK LOAD and BEHAVIOR PATTERN

FRUSTRATION MSerror=1.125 (82df)

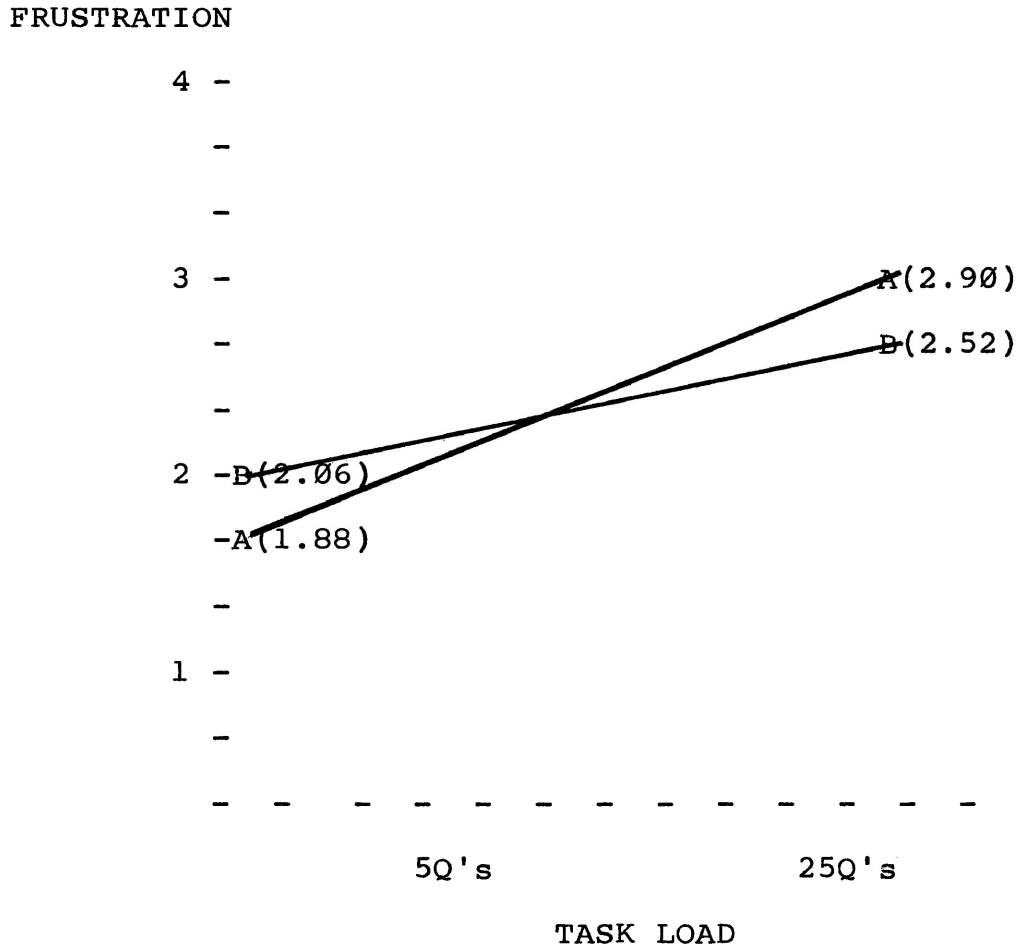
AGGRESSION MSerror=962.0 (82df)

	FRUSTRATION		AGGRESSION	
BEHAVIOR PATTERN	MS	F	MS	F
A	9.82	8.73**	5714.8	5.94*
B	2.30	2.04	143.5	0.14
TASK LOAD				
LTL (5Q's)	0.27	0.23	953.0	0.99
HTL (25Q's)	1.89	1.68	1370.0	1.42

* $p < 0.025$

** $p < 0.005$

FIGURE 1
TASK LOAD AND BEHAVIOR PATTERN
FRUSTRATION SCORES



Aggression:

The aggression dependent measure was derived from the subjects responses to the Experimenter Evaluation Questionnaire. The Aggression Dependent measure is the summation of questions 4, 5 and 6 on the Experimenter Evaluation Questionnaire; the items and the total were significantly intercorrelated, $p < 0.001$. The Aggression Check item 7 was not significantly correlated with any of the other items or with the measure of Aggression (Appendix H). The mean score on the Aggression Check was 56.5 out of a possible 100. The subjects felt their evaluations could affect the experimenter to a moderate degree therefore aggression is being measured.

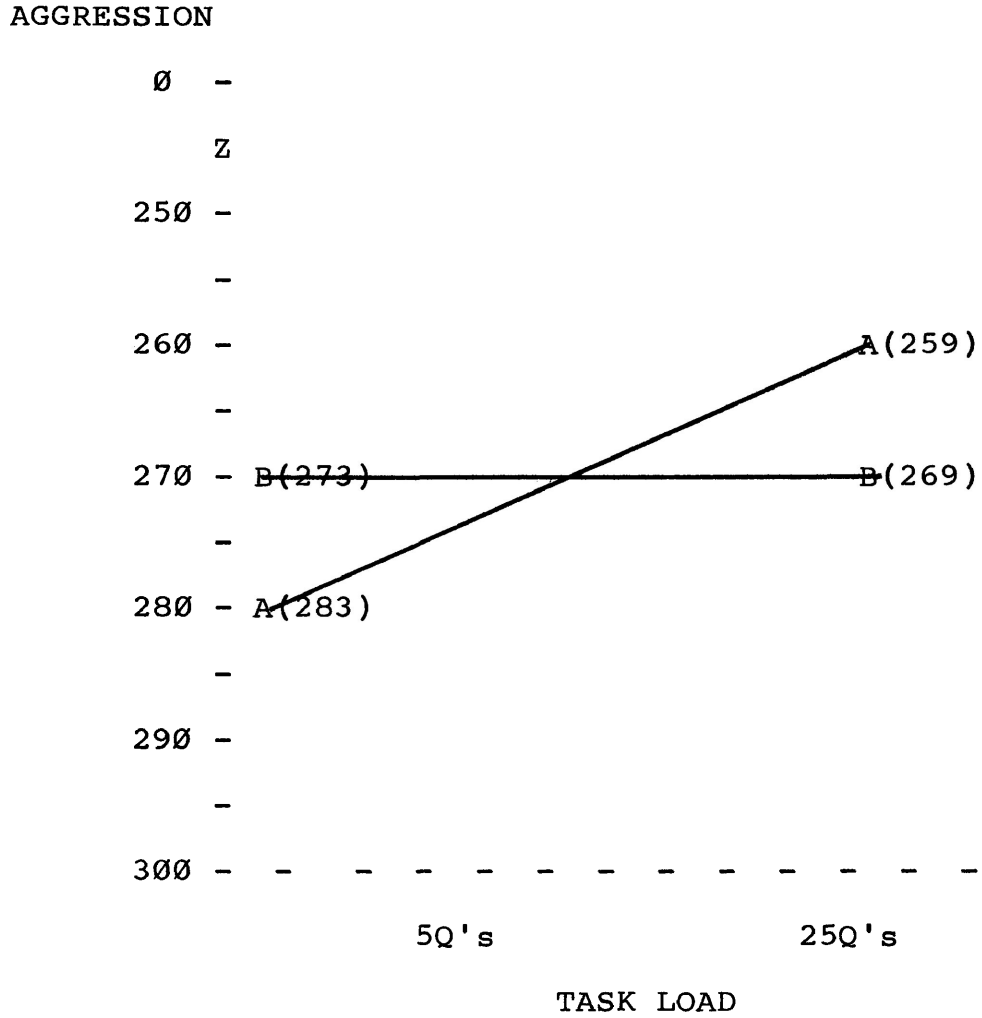
It was expected that Type A's would respond with greater aggression in the HTL condition and A's would be more aggressive in the HTL condition than B's. In order to test these hypotheses a 2x2x2 anova, Task Load, Sex and Behavior Pattern was performed. There was a trend for Task Load, $F(1,85)=3.308$, $p < 0.073$, with a mean of 277.94 in the 5 problem condition and of 264.81 in the 25 problem condition; subjects evaluations of the experimenter had a tendency to be less positive in the 25 problem condition (Appendix I). The Task Load x Behavior Pattern interaction was not significant, $F(1,85)=2.73$, $p < 0.102$. However, because of apriori expectations that A's would display greater aggression in the HTL condition, a simple effects analysis for Task Task Load and Behavior Pattern was

conducted (Table 3). Type A's did respond with significantly more aggression in the HTL condition than in the Low ($F(1,82)=5.94, p<0.025$). Type B's did not significantly vary over the Task Load conditions ($F(1,82)=0.14, p<ns$). Figure 2 reveals the B's evaluations as varying little over the 5 and 25 problem conditions, 272.65 and 269.03 respectively. The A's on the other hand display increased aggression in the High Frustration condition 258.57 in comparison to the Low 283.24. Again as with frustration the expected AB differences in the HTL were not significant ($F(1,82)=1.42, p<0.250$). A's and B's responses did not significantly vary in the LTL either, $F(1,82)=0.99, p<ns$.

The Subjective State Questionnaire:

The Subjective State Questionnaire was used to assess the subject's responses after the Task Load manipulation. Frustration was the emotion of primary interest. Frustration was positively correlated with items on the questionnaire considered negative emotional states and negatively correlated with those regarded as positive. Frustration was positively correlated with Anger, Concentration Difficulty, Impatience, Difficulty, Time Pressure and Boredom. Frustration was negatively correlated with Interest and Pleasure (Appendix J).

FIGURE 2
TASK LOAD AND BEHAVIOR PATTERN
AGGRESSION SCORES



Anger level was of interest as induced anger could be one cause of aggression in the present study. The subject's perceived Anger was positively correlated with Frustration, Concentration Difficulty, Impatience, Time Pressure, and Boredom and was negatively correlated with Interest and Pleasure. In order to examine whether anger varied over the Task Load conditions and to determine if there were AB differences in anger the following analysis was performed: A 2x2x2 Anova, Task Load, Sex and Behavior Pattern. No significant effects were found; anger did not vary over the Task Load conditions and there were no AB differences (Appendix K).

For the other items on the Subjective Report Questionnaire 2x2x2 Task Load x Sex x Behavior Pattern Anovas were performed. Subjects in the LTL condition viewed their experience in a more positive light than those in the HTL condition. Subjects reported having more Concentration Difficulty [$F(1,85)=11.341, p<0.001$], found the problems more Difficult [$F(1,85)=14.472, p<0.001$] and felt more Impatient [$F(1,85)=16.233, p<0.001$] and Time Pressured [$F(1,85)=25.588, p<0.001$] in the 25 problem Task Load condition. There was a trend for the 5 problem condition to be more Interesting [$F(1,85)=3.271, p<0.074$] along with a trend for the 5 problem condition to be considered less Boring [$F(1,85)=3.627, p<0.061$] in addition Type A females found the problems to be more Boring than the Type A males [$F(1,85)=3.986, p<0.049$]. Greater Pleasure

was derived from the problems by Male subjects [$F(1,85)=4.204, p<0.044$] and those in the 5 problem condition [$F(1,85)=5.217, p<0.025$] (Appendices L, M, N, O, P, Q and R).

The items of the Subjective State Questionnaire were also correlated with the AB score and the aggression dependent measure in order to observe possible relationships. Increased aggression was found to be significantly related to higher levels of reported Anger, Concentration Difficulty and Boredom. AB score was found to be positively related to Anger: higher AB scores were associated with greater levels of reported anger (Appendix J).

The relationship between Frustration and Aggression was examined for Type A's and B's separately. With Type A's there was a trend such that greater frustration was related to increased aggression. For Type B's frustration and aggression were not related (Appendix J-2).

DISCUSSION

It was expected TABP individuals would be more aggressive in the High Task Load (HTL) condition relative to the Low Task Load (LTL) condition. Type A subjects were found to display more aggression in the HTL condition relative to the LTL. It was expected Type A's would also report greater frustration in the HTL condition relative to the LTL. Type A subjects did report higher levels of frustration in the HTL condition relative to the LTL. For both frustration and aggression the expected AB differences in the HTL condition were not significant.

There was a trend for frustration and aggression to be related in Type A subjects. For Type A's increases in aggression in the HTL condition correspond with increases in frustration in the HTL condition. This study does not demonstrate a causal link between frustration and aggression in Type A's; however, it can be inferred from the results that frustration may be the intervening variable between task failure and aggression in Type A's. Increased aggression in Type A's is postulated to be the result of increased frustration in response to task failure.

The Carver and Glass (1978) and the Zurawski and Houston (1983) studies are similar to the present investigation in that all involve a frustration manipulation and the subsequent measure of aggression and

or anger in TABP individuals. The Carver and Glass (1978) study found that A's became more aggressive in response to frustration as did the present study; however, the effect was of a smaller magnitude in the present study. Carver and Glass's (1978) use of the upper and lower thirds of the AB distribution as A's and B's respectively could account for the difference in magnitudes of the effect.

Zurawski and Houston (1983) found both A's and B's became angered in response to a frustration manipulation. In the present study subjects did not become angered by the task failure frustration manipulation. However, correlational data suggests that there were anger effects that were apparently independent of the frustration manipulation. Anger was related to aggression and higher AB scores: angry subjects displayed increased aggression and Type A's had greater self-reported anger levels than B's. The frustration manipulation in the Zurawski and Houston (1983) study involved a confederate who was obviously responsible for the subject failing at the task and thus being denied the reward. The subject could identify the confederate as responsible for their frustration and subsequently became angered while in this study subjects did not label their arousal as anger to a significant degree. The results of the present investigation suggest anger, independent of the frustration manipulation, was related to aggression and higher AB scores.

The results of Carver and Glass (1978) and the present study are similar in direction. Perceived frustration level was measured in both studies; however, in Carver and Glass's (1978) study the measure was used only as a check of the frustration manipulation. The effects of AB and AB by Frustration Manipulation interaction on perceived frustration level were not tested. For Type A's in the present study it was found those in the HTL condition reported greater frustration. Carver and Glass (1978) interpreted the increased aggression in A's to be a result of the Type A individual's attempt to maintain and or regain control over their environment. Frustration was seen by Carver and Glass (1978) to be the stimulus for the attempt. The results of the present study suggest that Type A's react to increased failure with greater frustration and this leads to increased aggression in A's.

Glass (1977) describes Type A as a behavioral style in which the individual attempts to control their environment. Within the framework of Glass's (1977) theory of Type A the results of the present study can be interpreted in the following manner. Task failure leads to loss of control which for A's leads to increased perceived frustration and subsequently increased aggression.

The experimental finding that Type A's react to increasing degrees of task failure with increased perceived frustration levels as well as increased overt aggression has direct clinical ramifications. Extrapolating from the

findings of this study one can speculate how aggression is generated in Type A's. The first link is between task failure which can be presumed to be salient and frustration. Task failure and the intrinsic emotional characteristics of the Type A's interact to create the increase in frustration. The Type A individual's competitive nature no doubt intensifies the negative experience of failure and might be the component of the Type A behavior pattern responsible for the increase in perceived frustration. The second link is between frustration and aggression. Berkowitz's (1969) Revised Frustration-Aggression Hypothesis states that frustrated individuals given the appropriate stimulus cues will respond with aggression. The Type A subjects became moderately frustrated in the HTL condition and the Experimenter Evaluation Questionnaire was a sufficient stimulus cue for aggression. Low frustration tolerance to failure is one probable mechanism by which aggression is generated in Type A's.

In order to reduce aggression in Type A's, therapy could be directed at the links between failure and frustration, and frustration and aggression. Rational Emotive Therapy (RET) would be an effective form of therapy for attacking the failure-frustration link. Through RET A's can be shown failure does not necessarily have to result in increases in frustration. RET can also be utilized to weaken the second link; A's can be taught to

develop alternative responses to frustration. Assertiveness Training (AT) would also be an effective component of a treatment package in reducing aggression in response to frustration. Through AT Type A's could develop assertive responses to situations which previously provoked aggressive reactions.

The experimental results should be interpreted with the following caution: the subjects did not display much aggression towards the experimenter. By the standards of the traditional letter grading system Type A subjects in the HTL condition, the most aggressive group, felt the experimenter worthy of an A. Type A subjects in the HTL condition were moderately frustrated and were therefore only somewhat aggressive. In addition some aggression was probably directed inward. The majority of subjects failed if 50% is considered as the criterion. The reaction to this failure may have been some inwardly directed aggression as well. In retrospect an assessment of inwardly directed aggression would have been warranted. Investigations of Type A and aggression in the future should explore this avenue: inward directed aggression should be measured along with overt aggression.

Carver and Glass (1978) suggest increased aggression in Type A's is instrumental in nature. Type A's displayed increased aggression in order to aid in the accomplishment of an objective other than the act of aggression itself. Type A's in the present study could accomplish nothing but

revenge when evaluating the experimenter. The increased aggression displayed by Type A subjects in the present study can be construed as hostile in nature. The present study was by no means a test to determine the nature of aggression in Type A's; however, future research should examine the nature of aggression in Type A's. Is increased aggression in Type A's instrumental or hostile in nature?

The absence of sex differences with respect to frustration and aggression in this study should lead other researchers when doing related research to utilize female subjects as well as male. As the present study is the first of this type to utilize female subjects: experimental designs should allow for the investigation of possible sex differences.

Conclusion

From this investigation it can be inferred Type A's respond with increased aggression and frustration to increased degrees of task failure.

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APPENDIX A
THE JENKINS ACTIVITY SURVEY FORM T



A

Medical research is trying to determine how life style may influence the health of people. This survey is part of such a research effort.

Please answer the questions on the following pages by marking the answers that are true for you. Each person is different, so there are no "right" or "wrong" answers. Of course, all you tell is strictly confidential--to be seen only by the research team. Do not ask anyone else about how to reply to the items. It is your personal opinion that we want. Please use the answer sheet provided to record your responses to the items in this booklet.

Your assistance will be greatly appreciated.

For each of the following items, please circle the number of the ONE best answer on your answer sheet.

1. Do you ever have trouble finding time to get your hair cut or styled?
 1. Never
 2. Occasionally
 3. Almost always
2. Does college "stir you into action"?
 1. Less often than most college students.
 2. About Average
 3. More often than most college students
3. Is your everyday life filled mostly by
 1. Problems needing solution
 2. Challenges needing to be met
 3. A rather predictable routine of events
 4. Not enough things to keep me interested or busy
4. Some people live a calm, predictable life. Others find themselves often facing unexpected changes, frequent interruptions, inconveniences or "things going wrong." How often are you faced with these minor (or major) annoyances or frustrations?
 1. Several times a day
 2. About once a day
 3. A few times a week
 4. Once a week
 5. Once a month or less
5. When you are under pressure or stress, do you usually:
 1. Do something about it immediately
 2. Plan carefully before taking any action
6. Ordinarily, how rapidly do you eat?
 1. I'm usually the first one finished.
 2. I eat a little faster than average.
 3. I eat at about the same speed as most people.
 4. I eat more slowly than most people.
7. Has your spouse or some friend ever told you that you eat too fast?
 1. Yes often
 2. Yes, once or twice
 3. No, no one has told me this

8. How often do you find yourself doing more than one thing at a time, such as working while eating, reading while dressing, figuring out problems while driving?
1. I do two things at once whenever practical.
 2. I do this only when I'm short of time.
 3. I rarely or never do more than one thing at a time.
9. When you listen to someone talking, and this person takes too long to come to the point, do you feel like hurrying him along?
1. Frequently
 2. Occasionally
 3. Almost never
10. How often do you actually "put words in his mouth" in order to speed things up?
1. Frequently
 2. Occasionally
 3. Almost never
11. If you tell your spouse or a friend that you will meet them somewhere at a definite time, how often do you arrive late?
1. Once in a while
 2. Rarely
 3. I am never late.
12. Do you find yourself hurrying to get places even when there is plenty of time?
1. Often
 2. Occasionally
 3. Rarely or never
13. Suppose you are to meet someone at a public place (street corner, building lobby, restaurant) and the other person is already 10 minutes late. Will you
1. Sit and wait?
 2. Walk about while waiting?
 3. Usually carry some reading matter or writing paper so you can get something done while waiting?
14. When you have to "wait in line," such as at a restaurant, a store, or the post office, do you
1. Accept it calmly?
 2. Feel impatient but do not show it?
 3. Feel so impatient that someone watching could tell you were restless?
 4. Refuse to wait in line, and find ways to avoid such delays?
15. When you play games with young children about 10 years old, how often do you purposely let them win?
1. Most of the time
 2. Half of the time
 3. Only occasionally
 4. Never
16. Do most people consider you to be
1. Definitely hard-driving and competitive?
 2. Probably hard-driving and competitive?
 3. Probably more relaxed and easy going?
 4. Definitely more relaxed and easy going?
17. Nowadays, do you consider yourself to be
1. Definitely hard-driving and competitive?
 2. Probably hard-driving and competitive?
 3. Probably more relaxed and easy going?
 4. Definitely more relaxed and easy going?

18. How would your spouse (or closest friend) rate you?
1. Definitely hard-driving and competitive?
 2. Probably hard-driving and competitive?
 3. Probably relaxed and easy going?
 4. Definitely relaxed and easy going?
19. How would your spouse (or best friend) rate your general level of activity?
1. Too slow. Should be more active.
 2. About average. Is busy much of the time.
 3. Too active. Needs to slow down.
20. Would people who know you well agree that you take your work too seriously?
1. Definitely Yes
 2. Probably Yes
 3. Probably no
 4. Definitely No
21. Would people who know you well agree that you have less energy than most people?
1. Definitely Yes
 2. Probably Yes
 3. Probably No
 4. Definitely No
22. Would people who know you well agree that you tend to get irritated easily?
1. Definitely Yes
 2. Probably Yes
 3. Probably No
 4. Definitely No
23. Would people who know you well agree that you tend to do most things in a hurry?
1. Definitely Yes
 2. Probably Yes
 3. Probably No
 4. Definitely No
24. Would people who know you well agree that you enjoy "a contest" (competition) and try hard to win?
1. Definitely Yes
 2. Probably Yes
 3. Probably No
 4. Definitely No
25. Would people who know you well agree that you get a lot of fun out of your life?
1. Definitely Yes
 2. Probably Yes
 3. Probably No
 4. Definitely No
26. How was your "temper" when you were younger?
1. Fiery and hard to control.
 2. Strong, but controllable.
 3. No problem.
 4. I almost never got angry.
27. How is your "temper" nowadays?
1. Fiery and hard to control.
 2. Strong, but controllable.
 3. No problem.
 4. I almost never get angry.
28. When you are in the midst of studying and someone interrupts you, how do you usually feel inside?
1. I feel O.K. because I work better after an occasional break.
 2. I feel only mildly annoyed.
 3. I really feel irritated because most such interruptions are unnecessary.

(Remember, the answers on these Questionnaires are confidential information and will not be revealed to officials of your school.)

29. How often are there deadlines in your courses? (If deadlines occur irregularly, please circle the closest answer below.)
1. Daily or more often.
 2. Weekly.
 3. Monthly.
 4. Never
30. Do these deadlines usually
1. Carry minor pressure because of their routine nature?
 2. Carry considerable pressure, since delay would upset things a great deal?
31. Do you ever set deadlines or quotas for yourself in courses or other things?
- 1 No
 - 2 Yes, but only occasionally
 3. Yes, once per week or more often.
32. When you have to work against a deadline, is the quality of your work
1. Better?
 2. Worse?
 3. The same? (Pressure makes no difference)
33. In school do you ever keep two projects moving forward at the same time by shifting back and forth rapidly from one to the other?
1. No, never.
 2. Yes, but only in emergencies.
 3. Yes, regularly.
34. Do you maintain a regular study schedule during vacations such as Thanksgiving, Christmas, and Easter?
1. Yes
 2. No
 3. Sometimes
35. How often do you bring your work home with you at night or study materials related to your courses?
1. Rarely or never.
 2. Once a week or less often.
 3. More than once a week.
36. How often do you go to the school when it is officially closed (such as nights or weekends)? If this is not possible, circle 0.
1. Rarely or never.
 2. Occasionally (less than once a week).
 3. Once or more a week.
37. When you find yourself getting tired while studying, do you usually
1. Slow down for a while until your strength comes back.
 2. Keep pushing yourself at the same pace in spite of the tiredness.
38. When you are in a group, do the other people tend to look to you to provide leadership?
1. Rarely.
 2. About as often as they look to others.
 3. More often than they look to others.
39. Do you make yourself written lists of "things to do" to help you remember what needs to be done?
1. Never
 2. Occasionally
 3. Frequently

IN EACH OF THE FOLLOWING QUESTIONS, PLEASE COMPARE YOURSELF WITH THE AVERAGE STUDENT AT YOUR SCHOOL. PLEASE CIRCLE THE MOST ACCURATE DESCRIPTION.

40. In amount of effort put forth, I give

- | | | | |
|---------------------|-------------------------|-------------------------|---------------------|
| 1. Much more effort | 2. A little more effort | 3. A little less effort | 4. Much less effort |
|---------------------|-------------------------|-------------------------|---------------------|

41. In sense of responsibility, I am

- | | | | |
|--------------------------|------------------------------|------------------------------|--------------------------|
| 1. Much more responsible | 2. A little more responsible | 3. A little less responsible | 4. Much less responsible |
|--------------------------|------------------------------|------------------------------|--------------------------|

42. I find it necessary to hurry

- | | | | |
|--------------------------|------------------------------|------------------------------|--------------------------|
| 1. Much more of the time | 2. A little more of the time | 3. A little less of the time | 4. Much less of the time |
|--------------------------|------------------------------|------------------------------|--------------------------|

43. In being precise (careful about detail), I am

- | | | | |
|----------------------|--------------------------|--------------------------|----------------------|
| 1. Much more precise | 2. A little more precise | 3. A little less precise | 4. Much less precise |
|----------------------|--------------------------|--------------------------|----------------------|

44. I approach life in general

- | | | | |
|------------------------|----------------------------|----------------------------|------------------------|
| 1. Much more seriously | 2. A little more seriously | 3. A little less seriously | 4. Much less seriously |
|------------------------|----------------------------|----------------------------|------------------------|

JENKINS ACTIVITY SURVEY ANSWER SHEET

(F)

JENKINS ACTIVITY SURVEY
ANSWER SHEET

PLEASE CROSS OUT THE NUMBER OF THE ONE BEST ANSWER TO EACH ITEM IN THE JENKINS ACTIVITY SURVEY.

- 1) 1 2 3
- 2) 1 2 3
- 3) 1 2 3 4
- 4) 1 2 3 4 5
- 5) 1 2
- 6) 1 2 3 4
- 7) 1 2 3
- 8) 1 2 3
- 9) 1 2 3
- 10) 1 2 3
- 11) 1 2 3
- 12) 1 2 3
- 13) 1 2 3
- 14) 1 2 3 4
- 15) 1 2 3 4
- 16) 1 2 3 4
- 17) 1 2 3 4
- 18) 1 2 3 4
- 19) 1 2 3
- 20) 1 2 3 4
- 21) 1 2 3 4
- 22) 1 2 3 4
- 23) 1 2 3 4
- 24) 1 2 3 4
- 25) 1 2 3 4
- 26) 1 2 3 4
- 27) 1 2 3 4
- 28) 1 2 3
- 29) 1 2 3 4
- 30) 1 2
- 31) 1 2 3
- 32) 1 2 3
- 33) 1 2 3
- 34) 1 2 3
- 35) 1 2 3
- 36) 1 2 3
- 37) 1 2
- 38) 1 2 3
- 39) 1 2 3
- 40) 1 2 3 4
- 41) 1 2 3 4
- 42) 1 2 3 4
- 43) 1 2 3 4
- 44) 1 2 3 4

NAME: _____
(PLEASE PRINT)

AGE: _____

STUDENT CLASSIFICATION: _____

APPENDIX B
TASK LOAD QUESTIONS

Each question or group of questions is based on a passage or set of statements. In answering some of the questions, it may be useful to draw a rough diagram. Choose the best answer for each question and blacken the corresponding space on your answer sheet.

Questions 1–4 are based on the following.

Lance is selecting carpeting, wallpaper, and drapes for four rooms in Mrs. March's apartment. For one room, he chooses maroon carpeting and purple drapes; for another, he chooses striped drapes and fleur-de-lis wallpaper. For the dining room he selects green carpeting and does *not* use fleur-de-lis wallpaper. For the bedroom he chooses lavender drapes and pink walls. For one room, he uses carpeting of the same color as in the dining room. He uses white for carpeting, wallpaper, and drapes, once each in a different room. The den is adjacent to the living room and must not repeat any of its colors.

1. If one room has yellow walls, it must also have
 (A) white drapes (B) maroon carpeting (C) purple drapes (D) white carpeting
 (E) striped drapes
2. Which correctly lists the colors of carpeting, wallpaper, and drapes, in that order, for one room?
 (A) Maroon, green, purple (B) Green, fleur-de-lis, striped (C) Green, white, white
 (D) Green, pink, lavender (E) White, fleur-de-lis, striped
3. Which room has white walls?
 I. Living room
 II. Dining room
 III. Den
 (A) I only (B) II only (C) III only (D) I or III (E) II or III
4. If Lance wishes to avoid repetition of any colors between the living room and the dining room, he can do so by changing the color of
 (A) the carpeting in the dining room
 (B) the wallpaper in the living room or the dining room
 (C) the wallpaper or the carpeting in the living room
 (D) the drapes in the dining room
 (E) the drapes in the dining room or the wallpaper in the living room

Gary: I wish you wouldn't drink so much beer. It's bad for your health.

Nancy: How can you say that? I don't weigh a pound more than I did a year ago.

5. Which of the following responses would most strengthen Gary's argument?
 (A) You weigh ten pounds more than you did six years ago.
 (B) Most people who drink a lot of beer do put on weight.
 (C) If you keep drinking so much beer, you will soon put on weight.
 (D) Putting on weight is not the only harmful effect of drinking beer.
 (E) You can put on weight in other ways than by drinking beer.

Questions 6-7 are based on the following.

Students who are excused from Freshman Composition write better than those who take the course. Thus, we can encourage better writing by our students by dropping the Freshman Composition course.

6. The major flaw in the reasoning used in the argument above is that the author
 - (A) bases the argument on a purely subjective judgment
 - (B) does not cite evidence for the statements given
 - (C) confuses cause and effect
 - (D) fails to take into account any long-term effects of the course
 - (E) assumes that all freshman composition courses are essentially alike

7. Each of the following, if true, would weaken the argument above except
 - (A) schools with no freshman composition course do not generally produce better student writers
 - (B) most students who take the Freshman Composition course do not appreciably improve their writing skills
 - (C) to be excused from Freshman Composition, a student must pass a rigorous writing test
 - (D) each of the English department's best instructors teaches at least one Freshman Composition class each semester
 - (E) 65 percent of the students surveyed reported that they learned a great deal about grammar and rhetoric from taking Freshman Composition

Questions 8-12 are based on the following.

Five executives of a European corporation hold a conference in Rome.

Mr. A can speak Spanish and Italian.

Mr. B understands Spanish and English.

Mr. C converses in English and Italian.

Mr. D speaks French and understands Spanish quite well.

Mr. E, a native Italian, can also speak French.

8. Which, of the following, can act as interpreter when Mr. C and Mr. D wish to confer?
 - (A) only Mr. A (B) only Mr. B (C) only Mr. E (D) Mr. A or Mr. B (E) any of the other three executives

9. Which, of the following, cannot converse between them without an interpreter?
 - (A) Mr. B and Mr. E (B) Mr. A and Mr. B (C) Mr. A and Mr. C (D) Mr. B and Mr. D (E) Mr. A and Mr. E

10. Besides Mr. E, which of the following can converse with Mr. D without an interpreter?
 - (A) only Mr. A (B) only Mr. B (C) only Mr. C (D) Messrs. A and B (E) Messrs. A, B, and C

11. If a sixth executive is brought in, to be understood by the maximum number of the original five, he should be fluent in
 - (A) English and French (B) Italian and English (C) French and Italian (D) Italian and Spanish (E) English and Spanish

12. Of the languages spoken at this conference, choose the two least common languages.
 - (A) English and Spanish (B) English and French (C) Italian and Spanish (D) English and Italian (E) French and Spanish

Questions 13–16 are based on the following.

All A's, B's, C's, D's, E's, and F's are Q's.
 All A's are B's.
 No B that is not an A is an F.
 Some C's are A's.
 All D's are C's.
 Some C's are not B's.
 No D is an A.
 All Q's and only Q's that are neither B's nor C's are E's.

13. Which of the following can be deduced from the information given?
 (A) All F's are A's. (B) Some F's are A's. (C) Some F's are E's.
 (D) Some F's are C's. (E) All F's are A's, C's, or E's.
14. Which must be false if the information given is true?
 (A) No D's are B's. (B) Some B's are D's. (C) Some F's are both B's and C's.
 (D) Some Q's are neither B's nor E's. (E) Some F's are D's.
15. Which cannot be shown to be true or false on the basis of the information given?
 I. No B or C is an E.
 II. Some C's are B's but not A's.
 III. No B is both an A and a D.
 (A) I only (B) II only (C) III only (D) I and II (E) II and III
16. P is not a B. Which of the following must be true?
 (A) P is an E.
 (B) If P is a C, it is neither an A nor a D.
 (C) If P is a Q, it is an E or a C.
 (D) If P is not an E, it is a C.
 (E) If P is a Q, it may be a C or an A, but not both.

Questions 17–22 are based on the following.

At a congress of the Progressive Federal Party, the seven top party leaders, who are all cabinet ministers, are seated on the platform in order of rank. The Prime Minister, the party leader, is in the center. The closer a person is to the Prime Minister, the higher is his or her rank, with a person on the Prime Minister's right outranking one equidistant from the Prime Minister on her left. The seven leaders are Arning, Brenner, Civili, Dorner, Eckland, Fentz, and Grell.

Fentz is four places to the left of the Minister of Agriculture, who is two places to the right of Civili.

Brenner's neighbors are Arning and the Minister of Agriculture.

Grell is two places to the left of Dorner.

The Ministers of Education, Mining, and Culture are seated together, in that order, from left to right.

The remaining ministers are those of Social Welfare and Defense.

17. The Minister of Culture is
 (A) Arning (B) Brenner (C) Civili (D) Dorner (E) Eckland
18. The fifth-ranking person in the party hierarchy is
 (A) Grell, the Minister of Mining
 (B) Fentz, the Minister of Culture
 (C) Dorner, the Prime Minister
 (D) Eckland, the Minister of Defense
 (E) Arning, the Minister of Education

19. The Minister of Social Welfare
- I. outranks the Minister of Defense
 - II. is outranked by the Minister of Mining
- (A) I only (B) II only (C) I and II (D) I or II, but not both
(E) Neither I nor II
20. How many of the seven party leaders outrank the Minister of Education?
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6
21. If, during the congress, the Minister of Agriculture and the Minister of Education are ordered to exchange positions, which is true?
(A) Arning will move to a seat six places away from his original seat.
(B) Fentz will move up five places in the leadership ranking.
(C) Eckland will move to a seat three places away from his original seat.
(D) Grell will move up four places in the leadership ranking.
(E) Eckland will move from the Prime Minister's left side to his right.
22. If, during the congress, Eckland is demoted two places in the party leadership ranking, which is true?
(A) The Minister of Defense moves up one place in the leadership ranking.
(B) Civili becomes the second-ranking leader in the party.
(C) The Minister of Mining moves up two places in the leadership ranking.
(D) Dorner is demoted within the leadership.
(E) The positions of five persons within the leadership remain unchanged.
23. Lillian, who has just celebrated her 107th birthday, attributes her longevity to her lifelong habit of drinking a double shot of whiskey each night and smoking three cigars each morning. The best way to counter her argument would be to point out that
(A) smoking has been proved to be a causative factor in several life-threatening diseases
(B) other factors besides those mentioned may have caused her to live 107 years
(C) not all centenarians drink alcohol and smoke tobacco
(D) Lillian should not be consuming the substances mentioned without medical advice
(E) alcohol has been shown to kill brain cells

Questions 24–25 are based on the following.

If Dr. Seymour's theory is correct, then the events she predicts will happen. The events she predicted did happen. Therefore, her theory must be correct.

24. Which of the following arguments has a logical structure that most nearly resembles that of the argument above?
(A) If we win the game, we will be the league champions. We won the game; therefore, we are the league champions.
(B) If the fan is running, then the electricity must be on. The electricity is on; therefore, the fan must be running.
(C) If the store is open, I will buy a shirt. I think the store is open; therefore, I should be able to buy a shirt.
(D) If Alice answers her phone, then my prediction is correct. I predict that she is at home; therefore, she will answer her phone.
(E) If Ted's flight is delayed, he will miss his appointment. He kept his appointment; therefore, his flight must have been on time.

25. The conclusion drawn in the argument above would be valid if which of the following were true?
- (A) Only Dr. Seymour's theory fully explains the events which happened.
 - (B) If the events Dr. Seymour predicted happen, then her theory is correct.
 - (C) If Dr. Seymour's theory is correct, then the events she predicted may happen.
 - (D) Only Dr. Seymour predicted the events which happened.
 - (E) If the events Dr. Seymour predicted happen, then Dr. Seymour's theory may be correct.

STOP

IF YOU FINISH BEFORE TIME HAS ELAPSED, CHECK YOUR WORK ON THIS SECTION OF THE TEST ONLY. DO NOT GO ON TO THE NEXT SECTION OF THE TEST UNTIL TIME IS UP FOR THIS SECTION.

TASK LOAD ANSWER SHEETS

LOW TASK LOAD CONDITION:

- 1 A B C D E
- 2 A B C D E
- 3 A B C D E
- 4 A B C D E
- 5 A B C D E

HIGH TASK LOAD CONDITION:

- 1 A B C D E
- 2 A B C D E
- 3 A B C D E
- 4 A B C D E
- 5 A B C D E
- 6 A B C D E
- 7 A B C D E
- 8 A B C D E
- 9 A B C D E
- 10 A B C D E
- 11 A B C D E
- 12 A B C D E
- 13 A B C D E
- 14 A B C D E
- 15 A B C D E
- 16 A B C D E
- 17 A B C D E
- 18 A B C D E
- 19 A B C D E
- 20 A B C D E
- 21 A B C D E
- 22 A B C D E
- 23 A B C D E
- 24 A B C D E
- 25 A B C D E

APPENDIX C
SELF-REPORT QUESTIONNAIRE

CHECK THE BOX THAT BEST DESCRIBES HOW YOU FEEL.
BE AS ACCURATE AS POSSIBLE.

- | | NOT AT
ALL | SOMEWHAT | MODERATELY | VERY
MUCH |
|---|---------------|----------|------------|--------------|
| 1 Did you find the problems interesting? | | | | |
| 2 Did you find it difficult to concentrate? | | | | |
| 3 Did you feel frustrated? | | | | |
| 4 Did you feel angry? | | | | |
| 5 Did you feel impatient? | | | | |
| 6 How difficult did you find the problems? | | | | |
| 7 Did you find the task pleasurable? | | | | |
| 8 How "time pressured" did you feel? | | | | |
| 9 Did you find the problems boring? | | | | |

APPENDIX D
THE AGGRESSION MEASURE

EXAMPLE QUESTION

All in all Pierre Elliot Trudeau has been good for Canada.
Strongly Agree Strongly Disagree

Ø 100
_____ A B C

If you strongly agree with this statement you would put a stroke through the line at approximately A. If you disagree at approximately C. A stroke at B would denote neutrality. For this and the rest of the questions put ONE stroke through the line where it best indicates your opinion or answer. You may place your stroke at any point along the continuum.

1 Are you in any way dissatisfied with the way you were treated in this experiment?
Not at all dissatisfied Extremely dissatisfied
Ø 100

2 Were the demands made upon you in this study in any way excessive?
Not at all excessive Extremely excessive
Ø 100

3 Were you in any way mistreated by the experimenter conducting the experiment?
Not mistreated at all Mistreated to a great extent
Ø 100

4 How well did the graduate student perform in the role of experimenter?
Poorly Excellently
Ø 100

5 How would you rate his manner of interacting with others?
Extremely unpleasant and discourteous Extremely pleasant and courteous
Ø 100

6 In your opinion should this person be reappointed as a research assistant?
Definitely not Definitely yes
Ø 100

7 Do you think the overall opinion of the students who served as subjects in this study will influence the professor with regard to evaluating the experimenter?
Not at all A great deal
Ø 100

APPENDIX E

ANALYSIS OF VARIANCE
AB SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	588.012	3	196.004	71.388	0.000
SEX	0.360	1	0.360	0.131	0.718
TL	0.943	1	0.943	0.344	0.559
BP	543.681	1	543.681	198.017	0.000
2-WAY INTERACTIONS	4.741	3	1.580	0.576	0.633
SEX TL	2.521	1	2.521	0.918	0.341
SEX BP	0.149	1	0.149	0.054	0.816
TL BP	1.574	1	1.574	0.573	0.451
3-WAY INTERACTIONS	0.344	1	0.344	0.125	0.724
SEX TL BP	0.344	1	0.344	0.125	0.724
EXPLAINED	593.097	7	84.728	30.859	0.000
RESIDUAL	214.159	78	2.746		
TOTAL	807.256	85	9.497		

APPENDIX F

ANALYSIS OF VARIANCE
TASK FAILURE SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	9832.931	3	3277.644	14.816	0.000
SEX	22.262	1	22.262	0.101	0.752
TL	9523.177	1	9523.177	43.048	0.000
BP	53.766	1	53.766	0.243	0.623
2-WAY INTERACTIONS	459.448	3	153.149	0.692	0.559
SEX TL	1.455	1	1.455	0.007	0.936
SEX BP	22.484	1	22.484	0.102	0.751
TL BP	398.037	1	398.037	1.799	0.184
3-WAY INTERACTIONS	291.665	1	291.665	1.318	0.254
SEX TL BP	291.665	1	291.665	1.318	0.254
EXPLAINED	10584.043	7	1512.006	6.835	0.000
RESIDUAL	17255.494	78	221.224		
TOTAL	27839.537	85	327.524		

APPENDIX G

ANALYSIS OF VARIANCE
FRUSTRATION SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	14.270	3	4.757	4.221	0.008
SEX	3.586	1	3.586	3.182	0.078
TL	11.937	1	11.937	10.592	0.002
BP	0.095	1	0.095	0.085	0.772
2-WAY INTERACTIONS	2.248	3	0.749	0.665	0.576
SEX TL	1.290	1	1.290	1.145	0.288
SEX BP	0.159	1	0.159	0.141	0.708
TL BP	0.633	1	0.633	0.562	0.456
3-WAY INTERACTIONS	0.135	1	0.135	0.120	0.730
SEX TL BP	0.135	1	0.135	0.120	0.730
EXPLAINED	16.654	7	2.379	2.111	0.052
RESIDUAL	87.905	78	1.127		
TOTAL	104.558	85	1.230		

APPENDIX H

PEARSON CORRELATION COEFFICIENTS
INTERCORRELATIONS OF THE AGGRESSION MEASURE AND INDIVIDUAL TEST ITEMS

	AGGRESSION	Q1	Q2	Q3
AGG	1.00000 (86) P=*****	-0.5342 (86) P=0.0000	-0.4790 (86) P=0.0000	-0.4798 (86) P=0.0000
Q1	-0.5342 (86) P=0.0000	1.00000 (86) P=*****	0.6296 (86) P=0.0000	0.5490 (86) P=0.0000
Q2	-0.4790 (86) P=0.0000	0.6296 (86) P=0.0000	1.00000 (86) P=*****	0.4089 (86) P=0.0000
Q3	-0.4798 (86) P=0.0000	0.5490 (86) P=0.0000	0.4089 (86) P=0.0000	1.00000 (86) P=*****
Q4	0.8462 (86) P=0.0000	-0.3461 (86) P=0.001	-0.2269 (86) P=0.018	-0.3187 (86) P=0.001
Q5	0.8357 (86) P=0.0000	-0.4667 (86) P=0.0000	-0.4989 (86) P=0.0000	-0.4705 (86) P=0.0000
Q6	0.8465 (86) P=0.0000	-0.5472 (86) P=0.0000	-0.5345 (86) P=0.0000	-0.4927 (86) P=0.0000
CH	0.0903 (86) P=0.204	0.0003 (86) P=0.499	-0.1176 (86) P=0.140	-0.0108 (86) P=0.461

APPENDIX H

PEARSON CORRELATION COEFFICIENTS
INTERCORRELATIONS OF THE AGGRESSION MEASURE AND INDIVIDUAL TEST ITEMS

	Q4	Q5	Q6	AGG CHECK
AGG	0.8462 (86) P=0.0000	0.8357 (86) P=0.0000	0.8465 (86) P=0.0000	0.0903 (86) P=0.204
Q1	-0.3461 (86) P=0.001	-0.4667 (86) P=0.000	-0.5472 (86) P=0.000	0.0003 (86) P=0.499
Q2	-0.2269 (86) P=0.018	-0.4989 (86) P=0.000	-0.5345 (86) P=0.000	-0.1176 (86) P=0.140
Q3	-0.3187 (86) P=0.001	-0.4705 (86) P=0.000	-0.4927 (86) P=0.000	-0.0108 (86) P=0.461
Q4	1.0000 (0) P=*****	0.5082 (86) P=0.000	0.5909 (86) P=0.000	0.0791 (86) P=0.235
Q5	0.5082 (86) P=0.000	1.0000 (0) P=*****	0.6533 (86) P=0.000	0.0343 (86) P=0.377
Q6	0.5909 (86) P=0.000	0.6533 (86) P=0.000	1.0000 (0) P=*****	0.1044 (86) P=0.169
CH	0.0791 (86) P=0.235	0.0343 (86) P=0.377	0.1044 (86) P=0.169	1.0000 (0) P=*****

APPENDIX I

ANALYSIS OF VARIANCE
AGGRESSION SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	3902.888	3	1300.963	1.301	0.280
SEX	277.023	1	277.023	0.277	0.600
TL	3308.592	1	3308.592	3.308	0.073
BP	151.531	1	151.531	0.152	0.698
2-WAY INTERACTIONS	2734.497	3	911.499	0.911	0.439
SEX TL	77.756	1	77.756	0.078	0.781
SEX BP	19.942	1	19.942	0.020	0.888
TL BP	2730.796	1	2730.796	2.730	0.102
3-WAY INTERACTIONS	103.752	1	103.752	0.104	0.748
SEX TL BP	103.752	1	103.752	0.104	0.748
EXPLAINED	6741.133	7	963.019	0.963	0.464
RESIDUAL	78008.859	78	1000.114		
TOTAL	84749.992	85	997.059		

APPENDIX J

PEARSON CORRELATION COEFFICIENTS

INTERCORRELATIONS OF THE ITEMS ON THE SUBJECTIVE STATE QUESTIONNAIRE, AB SCORES

	AB	AGGRESSION	FRUSTRATION	ANGER	INTEREST	CONCENTRATION
AB	1.0000 (0) P=*****	0.0852 (86) P=0.218	0.0591 (86) P=0.294	0.1865 (86) P=0.043	-0.1555 (86) P=0.076	-0.0995 (86) P=0.181
AGGRESSION	0.0852 (86) P=0.218	1.0000 (0) P=*****	-0.1680 (86) P=0.061	-0.2435 (86) P=0.012	0.1142 (86) P=0.148	-0.2290 (86) P=0.017
FRUSTRATION	0.0591 (86) P=0.294	-0.1680 (86) P=0.061	1.0000 (0) P=*****	0.4631 (86) P=0.000	-0.5584 (86) P=0.000	0.5405 (86) P=0.000
ANGER	0.1865 (86) P=0.043	-0.2435 (86) P=0.012	0.4631 (86) P=0.000	1.0000 (0) P=*****	-0.4219 (86) P=0.000	0.3031 (86) P=0.002
INTEREST	-0.1555 (86) P=0.076	0.1142 (86) P=0.148	-0.5584 (86) P=0.000	-0.4219 (86) P=0.000	1.0000 (0) P=*****	-0.1847 (86) P=0.044
CONCENT- RATION	-0.0995 (86) P=0.181	-0.2290 (86) P=0.017	0.5405 (86) P=0.000	0.3031 (86) P=0.002	-0.1847 (86) P=0.044	1.0000 (0) P=*****
IMPATIENCE	0.0194 (86) P=0.430	-0.1263 (86) P=0.123	0.5582 (86) P=0.000	0.5846 (86) P=0.000	-0.4923 (86) P=0.000	0.4287 (86) P=0.000
DIFFICULTY	-0.1186 (86) P=0.138	-0.1127 (86) P=0.151	0.4380 (86) P=0.000	0.1292 (86) P=0.118	-0.3647 (86) P=0.000	0.2801 (86) P=0.005
PLEASURE	-0.0296 (86) P=0.393	0.0540 (86) P=0.311	-0.3716 (86) P=0.000	-0.2551 (86) P=0.009	0.6248 (86) P=0.000	-0.2350 (86) P=0.015
TIME PRESSURE	0.0240 (86) P=0.413	-0.1731 (86) P=0.055	0.5231 (86) P=0.000	0.3580 (86) P=0.000	-0.2584 (86) P=0.008	0.3958 (86) P=0.000
BOREDOM	0.0821 (86) P=0.226	-0.2391 (86) P=0.013	0.3590 (86) P=0.000	0.4860 (86) P=0.000	-0.6461 (86) P=0.000	0.2003 (86) P=0.032

APPENDIX J

PEARSON CORRELATION COEFFICIENTS

INTERCORRELATIONS OF THE ITEMS ON THE SUBJECTIVE STATE QUESTIONNAIRE, AB SCORES

	IMPATIENCE	DIFFICULTY	PLEASURE	TIME	PRESSURE
AB	0.0194 (86) P=0.430	-0.1186 (86) P=0.138	-0.0296 (86) P=0.393	0.0240 (86) P=0.413	
AGG	-0.1263 (86) P=0.123	-0.1127 (86) P=0.151	0.0540 (86) P=0.311	-0.1731 (86) P=0.055	
F	0.5582 (86) P=0.000	0.4380 (86) P=0.000	-0.3716 (86) P=0.000	0.5231 (86) P=0.000	
AR	0.5846 (86) P=0.000	0.1292 (86) P=0.118	-0.2551 (86) P=0.009	0.3580 (86) P=0.000	
I	-0.4923 (86) P=0.000	-0.3647 (86) P=0.000	0.6248 (86) P=0.000	-0.2584 (86) P=0.008	
C	0.4287 (86) P=0.000	0.2801 (86) P=0.005	-0.2350 (86) P=0.015	0.3958 (86) P=0.000	
IP	1.0000 (0) P=*****	0.3583 (86) P=0.000	-0.3887 (86) P=0.000	0.5066 (86) P=0.000	
DF	0.3583 (86) P=0.000	1.0000 (0) P=*****	-0.3077 (86) P=0.002	0.2864 (86) P=0.004	
P	-0.3887 (86) P=0.000	-0.3077 (86) P=0.002	1.0000 (0) P=*****	-0.1810 (86) P=0.048	
TP	0.5066 (86) P=0.000	0.2864 (86) P=0.004	-0.1810 (86) P=0.048	1.0000 (0) P=*****	
B	0.3984 (86) P=0.000	0.2803 (86) P=0.004	-0.4359 (86) P=0.000	0.2098 (86) P=0.026	

Appendix J-2

Pearson Correlation Coefficients

Seperate Intercorrelations of A's and B's with Frustration and Aggression

A's -0.2237
(38)
p=0.088

B's -0.1125
(48)
p=0.223

APPENDIX K

ANALYSIS OF VARIANCE
ANGER SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	3.747	3	1.249	2.006	0.120
SEX	1.314	1	1.314	2.111	0.150
TL	1.415	1	1.415	2.273	0.136
BP	0.940	1	0.940	1.510	0.223
2-WAY INTERACTIONS	0.856	3	0.285	0.458	0.712
SEX TL	0.000	1	0.000	0.000	0.993
SEX BP	0.162	1	0.162	0.260	0.611
TL BP	0.731	1	0.731	1.174	0.282
3-WAY INTERACTIONS	0.663	1	0.663	1.066	0.305
SEX TL BP	0.663	1	0.663	1.066	0.305
EXPLAINED	5.266	7	0.752	1.209	0.308
TOTAL	53.826	85	0.633		

APPENDIX L

ANALYSIS OF VARIANCE
CONCENTRATION SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	12.821	3	4.274	3.949	0.011
SEX	0.442	1	0.442	0.409	0.525
TL	12.272	1	12.272	11.341	0.001
BP	0.262	1	0.262	0.242	0.624
2-WAY INTERACTIONS	0.126	3	0.042	0.039	0.990
SEX TL	0.085	1	0.085	0.078	0.780
SEX BP	0.056	1	0.056	0.052	0.820
TL BP	0.000	1	0.000	0.000	0.992
3-WAY INTERACTIONS	2.185	1	2.185	2.019	0.159
SEX TL BP	2.185	1	2.185	2.019	0.159
EXPLAINED	15.132	7	2.162	1.998	0.066
RESIDUAL	84.403	78	1.082		
TOTAL	99.535	85	1.171		

APPENDIX M

ANALYSIS OF VARIANCE
DIFFICULTY SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	8.731	3	2.910	5.680	0.001
SEX	0.012	1	0.012	0.024	0.877
TL	7.415	1	7.415	14.472	0.000
BP	0.551	1	0.551	1.075	0.303
2-WAY INTERACTIONS	2.522	3	0.841	1.641	0.187
SEX TL	1.288	1	1.288	2.513	0.117
SEX BP	0.517	1	0.517	1.009	0.318
TL BP	0.682	1	0.682	1.332	0.252
3-WAY INTERACTIONS	0.132	1	0.132	0.257	0.613
SEX TL BP	0.132	1	0.132	0.257	0.613
EXPLAINED	11.385	7	1.626	3.174	0.005
RESIDUAL	39.964	78	0.512		
TOTAL	51.349	85	0.604		

APPENDIX N

ANALYSIS OF VARIANCE
IMPATIENCE SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	15.381	3	5.127	5.716	0.001
SEX	1.629	1	1.629	1.816	0.182
TL	14.561	1	14.561	16.233	0.000
BP	0.233	1	0.233	0.260	0.612
2-WAY INTERACTIONS	1.645	3	0.548	0.611	0.610
SEX TL	0.320	1	0.320	0.357	0.552
SEX BP	0.675	1	0.675	0.752	0.388
TL BP	0.709	1	0.709	0.791	0.377
3-WAY INTERACTIONS	1.067	1	1.067	1.190	0.279
SEX TL BP	1.067	1	1.067	1.190	0.279
EXPLAINED	18.093	7	2.585	2.882	0.010
RESIDUAL	69.965	78	0.897		
TOTAL	88.058	85	1.036		

APPENDIX O

ANALYSIS OF VARIANCE
TIME PRESSURE SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	28.338	3	9.446	8.568	0.000
SEX	0.450	1	0.450	0.408	0.525
TL	28.209	1	28.209	25.588	0.000
BP	0.478	1	0.478	0.433	0.512
2-WAY INTERACTIONS	4.742	3	1.581	1.434	0.239
SEX TL	1.571	1	1.571	1.425	0.236
SEX BP	0.086	1	0.086	0.078	0.781
TL BP	2.212	1	2.212	2.006	0.161
3-WAY INTERACTIONS	0.012	1	0.012	0.011	0.916
SEX TL BP	0.012	1	0.012	0.011	0.916
EXPLAINED	33.092	7	4.727	4.288	0.000
RESIDUAL	85.989	78	1.102		
TOTAL	119.081	85	1.401		

APPENDIX P

ANALYSIS OF VARIANCE
INTEREST SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	6.690	3	2.230	2.127	0.104
SEX	2.036	1	2.036	1.942	0.167
TL	3.430	1	3.430	3.271	0.074
BP	1.343	1	1.343	1.281	0.261
2-WAY INTERACTIONS	3.796	3	1.265	1.207	0.313
SEX TL	0.390	1	0.390	0.372	0.543
SEX BP	0.723	1	0.723	0.690	0.409
TL BP	2.661	1	2.661	2.538	0.115
3-WAY INTERACTIONS	0.438	1	0.438	0.418	0.520
SEX TL BP	0.438	1	0.438	0.418	0.520
EXPLAINED	10.924	7	1.561	1.488	0.184
RESIDUAL	81.785	78	1.049		
TOTAL	92.709	85	1.091		

APPENDIX Q

ANALYSIS OF VARIANCE
BOREDOM SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	3.454	3	1.151	1.901	0.136
SEX	0.999	1	0.999	1.648	0.203
TL	2.197	1	2.197	3.627	0.061
BP	0.432	1	0.432	0.713	0.401
2-WAY INTERACTIONS	3.996	3	1.332	2.199	0.095
SEX TL	0.858	1	0.858	1.416	0.238
SEX BP	2.414	1	2.414	3.986	0.049
TL BP	1.000	1	1.000	1.651	0.203
3-WAY INTERACTIONS	0.059	1	0.059	0.097	0.756
SEX TL BP	0.059	1	0.059	0.097	0.756
EXPLAINED	7.509	7	1.073	1.771	0.105
RESIDUAL	47.247	78	0.606		
TOTAL	54.756	85	0.644		

BEHAVIOR PATTERN X SEX INTERACTION: BOREDOM MEAN SCORES

	TYPE B'S	TYPE A'S
FEMALES	1.27	1.69
MALES	1.38	1.08

APPENDIX R

ANALYSIS OF VARIANCE
PLEASURE SCORES BY SEX, TASK LOAD (TL) AND BEHAVIOR PATTERN (BP)

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	8.940	3	2.980	2.789	0.046
SEX	4.493	1	4.493	4.204	0.044
TL	5.575	1	5.575	5.217	0.025
BP	0.091	1	0.091	0.085	0.772
2-WAY INTERACTIONS	2.537	3	0.846	0.791	0.502
SEX TL	0.528	1	0.528	0.494	0.484
SEX BP	0.171	1	0.171	0.160	0.690
TL BP	1.348	1	1.348	1.262	0.265
3-WAY INTERACTIONS	2.389	1	2.389	2.235	0.139
SEX TL BP	2.389	1	2.389	2.235	0.139
RESIDUAL	83.355	78	1.069		
TOTAL	97.221	85	1.144		