

THE EFFECT OF MODEL CONSISTENCY ON THE SUBSEQUENT
AGGRESSIVE BEHAVIOR OF AGGRESSIVE AND
NON-AGGRESSIVE OBSERVERS

By

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INTRODUCTION

Acts of aggression are common in our modern world. Such an act, usually defined as an action toward another with injurious intent, not only hurts the victim but additionally provides a variety of results for the aggressor. In many societies aggression has powerful status-conferring value for the aggressor.

A variety of factors are involved in an observer's determination of another's level of aggression in some action. The characteristics of the behavior are the principle determinant of an aggressive label. Additional factors are the intensity of the response and the expression of injury from the victim. The intentions of the person, if they are known, strongly influence whether a behavior is labeled aggressive.

More and more in today's society aggressive behavior is demonstrated in group form - gang fights, riots, etc. There is considerable research in the area of modeled aggression, a principle factor in mass aggressive behavior. Generally a model provides new patterns of behavior in others through observation of the model. The model may strengthen or weaken inhibitions of behavior that observers have previously learned. A strong determinant of mass aggressive behavior is that the actions of others serve as social prompts that facilitate similar types of behavior in others. In this manner an aggressive model can increase aggressive behavior in others and a non-aggressive model can decrease aggressive behavior in others.

In a social situation the approval of others can have a marked effect on the aggressive behavior of an observer of an aggressive model. Laboratory research has shown that if someone approves of an aggressive model's behavior in the presence of another observer, and is with that observer in a similar situation, the aggressive behavior of the observer increases. If the same person disapproves then the subsequent aggressive behavior of the observer decreases. It is interesting to note that if the approver said nothing while the model behaved aggressively and later watched the observer, the observer would demonstrate increased aggressive behavior. It would seem reasonable to say that persons who are more compliant to social rules would tend to demonstrate less aggressive behavior than a person who has little respect for social conventions concerning aggressive behavior in a social situation. This follows from the assumption that society in general disapproves of aggressive behavior.

Exactly why an aggressive model enhances the aggressive behavior of an observer is not known. Presumably, watching a model reduces the observer's inhibitions concerning his own aggressive feelings. The model, in effect, legitimizes the aggressive conduct of the observer and vicariously extinguishes the observer's fears and behavioral inhibitions. When these inhibitions are reduced the behavior of the observer becomes more cognitively controlled. The most effective models at reducing inhibitions are those who appear competent, assured and intelligent. The least effective are those who appear unsure and incompetent. In the laboratory the competent model would be one who acts very consistent, because consistency is an indication that a person feels secure in what he is doing. An inconsistent model would appear

more unsure of himself and, therefore, be considered less competent.

It follows that observers would tend to behave more like the consistent model than the inconsistent one.

The effects that a model has on the subsequent behavior of an observer are varied and dependent on many factors concerning both the model and the observer. These effects and the factors controlling them must be better understood, particularly so where aggressive behavior is involved. In a world filled with war, civil strife, racial rioting and a multitude of violent crimes, modeled aggression plays a significant role. Research findings in the laboratory concerning modeled aggression have far reaching effects.

REVIEW OF THE LITERATURE

In recent years a considerable amount of research has appeared in the literature in the area of aggression and the effect of modeling upon subsequent aggression. It is toward this latter area that this paper addresses itself. There are two major theoretical explanations of modeled aggressive behavior. The first is the catharsis hypothesis of modeled aggression recently supported by Doob and Wood (1972) and the second is the stimulation hypothesis experimentally demonstrated by Bandura, Ross and Ross (1961). In addition to these two theoretical explanations, numerous alternative explanations of the various experimental findings have also been presented including situational effects and methodological differences.

According to the catharsis doctrine, pent up emotions are eliminated through the actual or vicarious expression of one's personal emotions (Berkowitz, 1970). Recent experimental findings (for example, Berkowitz, 1970) have suggested that the catharsis hypothesis may not be a viable explanation of modeled aggressive behavior. In response to this trend, several authors have presented new arguments for the catharsis hypothesis. This revised catharsis hypothesis thus suggests that if aggressive feelings are aroused prior to the witnessing of an aggressive model, then these aggressive feelings will be vented vicariously through the model's behavior. When no such prior arousal occurs, the observer will follow the actions of the model. Doob and Wood (1972)

had a confederate insult their subjects and then had the subjects shock, or watch the experimenter shock, the confederate. The subjects were then given the opportunity to shock the confederate for the first or second time, depending on the condition they were in. Actually no shocks were delivered. This study showed that shock intensity decreased when the insulter was 'hurt' by either the subject or experimenter. Subjects gave more intense shock when they had no previous opportunity to 'hurt' their insulter. Additional subjects who were not insulted by the confederate gave more intense shocks to the previously shocked confederate than when the confederate was not previously shocked. Doob and Wood suggest that insult produced aggressive feelings which were followed by the opportunity to shock or witness the shocking of the insulter. This allowed the subjects to vent their pent up emotions. Non-insulted subjects did not experience this previous aggression arousal, so the shocking of the confederate only served as a model for the second shocking sessions, resulting in higher shock intensities. Many studies have been conducted investigating the catharsis hypothesis of modeled aggression. This study was selected for inclusion here because it is representative of more recent research on the catharsis hypothesis. Dollard, Doob, Miller, Mowrer and Sears (1939) present a further discussion of the catharsis hypothesis.

The stimulation hypothesis differs from the revised catharsis hypothesis in that it suggests that witnessing an aggressive model stimulates the aggressive feelings of the observer regardless of prior arousal. It implies the observer will always do what the model does. Bandura, Ross and Ross (1961) exposed nursery children to an aggressive or non-aggressive model and tested them for the amount of imitative

learning in a new situation in the absence of the model. The results of this study showed that observation of behavior of others is effective in eliciting responses whose original probability of occurrence was very low or zero. Children who observed the aggressive model demonstrated more physical aggressive behavior than children observing the non-aggressive model. These findings offer definite support for the stimulation hypothesis.

These theoretical approaches to aggression differ primarily in the amount of prior arousal a subject is experiencing. In the laboratory the application of these theoretical differences results entirely in methodology differences. The tendency in recent studies of modeled aggression is to use a learning paradigm where a confederate is supposedly attempting to learn some material and is shocked for poor performance. The model delivers some pre-established range of shock intensity and the subjects range of shock intensity is recorded as the dependent measure. Here again no shock is actually delivered to the confederate. Because of the contradictory theories and research findings in the area of modeled aggression, one must give thought to the validity of aggression research in the laboratory, particularly using the learning paradigm mentioned above. Wolfe and Baron (1971) conducted a study to investigate the validity, relevance, and accuracy of aggression-measuring experiments. These experimenters tested two different populations displaying different levels of violence outside the laboratory - prisoners and college students - to see if they would differentially use a Buss aggression box. They also tested the effects of a model on both populations. The subjects were insulted and the usual learning paradigm was used. Shock intensity was the dependent

measure. The results showed that prisoners directed more intense attacks against anger instigators than did college students. This finding suggests that laboratory measures of aggression do, indeed, accurately indicate the degree to which one person desires to harm another, according to Wolfe and Baron. In addition, this experiment also showed strong modeling effects for both groups. The model exerted almost equal effects on both groups which suggests that a model's influence may be largely independent of the initial strength of the observer's aggressive tendencies. Wolfe and Baron further suggest future research attempt to use subjects that are highly similar except in their level of aggression in life situations in studying the effects of modeled aggressive behavior.

Wolfe and Baron (1971) offer support for the validity of modeled aggression research using a learning paradigm and further emphasize the large effect a model has on the observer's behavior. They suggest the model may influence behavior independent of the observer's aggressive tendencies. It is significant to note that both theoretical approaches to modeled aggression agree that in most instances the observer will follow the example of the model. A number of studies (Hartmann, 1969; Baron and Kepner, 1970; Waldman and Baron, 1971) have been conducted which investigated the effects of various types of models.

Hartmann (1969) showed that a highly aggressive model increases the observer's aggressive behavior over that of the observer viewing a neutral model, and that this effect was enhanced when the observers were previously aroused by an insult. Subjects in this study were adolescents with a court commitment to the California Youth Authority. The subjects were shown three versions of a basketball game. The neutral

version depicted a basketball game. The second version cued on the attacker's responses of punching fists and aggressive verbalizations. The third version concentrated on the victims reactions. Following this exposure subjects participated in a learning paradigm study using a Buss aggression machine. The results showed that subjects exposed to the pain cues film or the instrumental aggression film both administered more intense shocks than subjects viewing the neutral film. Those subjects who were previously aroused by insult and then shown the two fight films gave significantly higher intensity shocks than their non-aroused counterparts.

Baron and Kepner (1970) investigated the effects of a model who deliberately gave low intensity shocks, a non-aggressive model, on the subsequent aggressive behavior of the observer of that model. Using a rigged questionnaire to show the similarity of, or differences in, attitudes on various topics between the model and subject, both were insulted by a second confederate and later given the opportunity to shock that confederate in a learning paradigm situation. The results showed that exposure to the non-aggressive model resulted in subjects delivering significantly less intense shocks on a Buss aggression box, compared to similar subjects who did not witness the model's behavior. This study further showed that a high level of attraction is not a necessary condition for the emulation of an aggressive model. In a similar study, Waldman and Baron (1971) investigated the effects of modeling, prior arousal, and similarity of the subject and model on subsequent aggression using a modified Buss aggression box. These experimenters found that exposure to a non-aggressive model was effective in reducing the observer's aggressive behavior, regardless of the existence of prior

anger arousal, as measured by shock duration. The intensity measure showed that the observer's aggressive behavior decreased only in the absence of provocation from the victim. Additional results showed that model-observer similarity, as measured by clothing similarity and rigged attitude scale questionnaires, failed to affect the magnitude of the aggression-inhibiting influence of the model.

All of the above mentioned studies show the dramatic effect a model has on the aggressive behavior of an observer. There does, however, seem to be conflicting evidence concerning the effects of prior arousal on the observer's subsequent aggressive behavior, the principle point of difference between the catharsis and stimulation hypothesis. An important variable which all of these studies have overlooked is that subjects may differ in their dispositions toward aggressive behavior prior to their participation in this study. If subjects do differ in their disposition toward aggression a large amount of unwanted variance would be introduced, particularly in those studies where prior arousal is used. A study by Larsen, Coleman, Forbes and Johnson (1972) attempted to determine through various measures whether subjects can be found who are quite similar in many ways but who demonstrate distinctly different levels of aggression. They used a variety of personality tests and correlated the results of these tests with various shock measurements obtained in an elaborate experimental procedure. The tests used were the Aggression Scale (Larsen, 1970), the Attributed Power Scale (Larsen and Mintors, 1971), the Buss Hostility Scale (Buss and Durkee, 1956), Parental Aggression Training Scale (Larsen and Schwendiman, 1970), and the Machiavellianism Scale (Christie and Geis, 1969). Their overall conclusion was that the situational structure is the all important

variable. According to the experimenters, their subjects often acted opposite to their predisposition when situational pressures were applied. None of the various aggressive measures correlated highly with actual aggressive behavior.

More recent studies have used scale 4 of the Minnesota Multiphasic Personality Inventory (MMPI), the psychopathic deviate (Pd) scale, in attempting to identify subjects with a prior disposition toward high or low aggressive behavior. Drake and Oetting (1959) reported that scale 4 of the MMPI was conceived from responses of persons described as psychopathic deviates. Most of these people were youthful, socially delinquent and demonstrated a lack of concern for societal mores. These authors further report that there is some indirect support that scale 4 indicates an antagonism to authority when appearing in male college students' profiles. They also suggest that scale 4 is associated with aggressive behavior and aggressive, belligerent attitudes toward authority. Similarly, Megargee and Mendelsohn (1966) found, while investigating the validity of many scales of the MMPI concerned with hostility and aggression, that scale 4, with or without K correction, significantly discriminated a group of randomly chosen individuals with no criminal records from three other groups of individuals with criminal records varying from extremely hostile and uncontrolled crimes to non-assaultive crimes. It appears that scale 4 can be considered a valid index of hostility and control, although its discriminative power is weak among assaultive groups. Hathaway and Meehl, as reported by Dahlstrom and Welsh (1960), refer to high scale 4 persons (T score above 70) as aggressive types. It seems reasonable to assume that scale 4 of the MMPI might be a successful tool in establishing the different

levels of aggression different people have in real life situations.

Wilkins, Scharff and Schlottmann (1974) conducted a study in which a number of differences were found between high scale 4 and low scale 4 scoring persons. The aggressive cues in this experiment were verbal news reports of violent events which the subjects listened to from a tape recorder. They found that on a pre-test shock intensity measure that high 4 subjects gave significantly higher intensity shock than did low 4 subjects. In the experimental conditions it was found that only when low 4 subjects were insulted prior to hearing the violent events tapes did their shock intensity level reach a level comparable to that of the aggressive type subjects. In contradiction to the findings of Wilkins et al. (1974), Nieberding (1973) investigated the hypothesis that different personality types will respond differently to varying probabilities of retaliation following exposure to an aggressive model. Using scale 4 of the MMPI to divide the subjects into aggressive and non-aggressive types, these subjects were exposed to a highly consistent aggressive model in a learning paradigm using shock. The results showed no differences between aggressive and non-aggressive types on either a shock intensity or shock duration measure. Nieberding attributes these findings to the extremely aggressive nature of the model.

The use of scale 4 of the MMPI to distinguish between subjects according to an inherent tendency toward aggressive behavior has produced conflicting results. There are, however, substantial methodological differences between the Wilkins et al. and Nieberding studies. This is sufficient basis to continue research in the area as the possibility that personality differences affect an observer's reaction to an aggressive or non-aggressive model is of such significance that it

should not be dropped on such little evidence. Ignoring personality factors in modeled aggression research may introduce unwanted error in the results.

STATEMENT OF THE PROBLEM

A number of studies have demonstrated that exposure to a model performing a particular type of aggressive behavior will have a subsequent effect on the observer's aggressive behavior. Bandura, Ross and Ross (1961), Wolfe and Baron (1971), and Nieberding (1973) showed that a highly aggressive model will produce significantly increased aggressive behaviors in observers of such a model. Baron and Kepner (1970) and Waldman and Baron (1971) demonstrated that a non-aggressive model is effective in reducing the aggressive behavior of observers regardless of the similarity between the subjects and the model. These latter studies suggest that stimulus conditions are more important determinants of observer behavior in modeled aggression studies than the individual personality characteristics of the observers, a conclusion suggested by Nieberding (1973).

It is possible that these stimulus determinants are not so much a function of the intensity of the shock delivered by the model which overrides the inherent nature of the observer, but rather are a function of the consistency of shock intensity delivered by the model. In the Waldman and Baron (1971) study, only buttons 1, 2, and 3 of 10 were used by their non-aggressive model. Similarly, Nieberding's (1973) high aggressive model used only buttons 7, 8, and 9 of 10. These consistently high or low shock intensities used by the model may have been an obvious 'suggestion' to the subjects that they were expected to do the same thing. In other words the models were so blatantly consistent that the

subjects perceived the demand characteristics of such a situation, suspecting that they should do the same thing because the experimenter wanted such behavior or, possibly, because they did not wish to appear different from the model.

Wilkins, Scharff and Schlottman (1974) found that subjects classified as aggressive or non-aggressive, as determined by their score on scale 4 of the MMPI, differentially delivered shock to a confederate both on a pretest measure and after listening to a violent news tape. Aggressive subjects gave consistently higher levels of shock intensity except when non-aggressive subjects were insulted prior to hearing the tape. Scale 4 of the MMPI effectively divided subjects into those with aggressive personality characteristics and those with non-aggressive personality characteristics.

If the consistency of the model's aggressive behavior is reduced, then the individual personality characteristics of the observers may become more important in determining the observer's aggressive behavior as compared to the situational determinants. In the present study, aggressive and non-aggressive subjects (as determined by scores on scale 4 of the MMPI) will be given a paired-associate learning task supposedly involving shock for incorrect responses both prior to and following exposure to a consistent, high aggressive model, an inconsistent, high aggressive model or no model at all. This design will permit the evaluation of the relative strengths of personality characteristics and demand characteristics as determinants of subjects' aggressive behavior. It is hypothesized that:

1. Aggressive subjects will administer more intense shocks than non-aggressive subjects on a pre-test measure (before being subjected to any of the treatment conditions).

2. Subjects exposed to an aggressive model will show a significantly greater increase in intensity of shocks administered from pre-test to post-test than will subjects exposed to no model.
3. Subjects exposed to a consistently aggressive model will show a significantly greater increase in intensity of shocks administered from pre-test to post-test than will subjects exposed to an inconsistently aggressive model.
4. There will be no differential pre-post changes in intensity of shock administered by aggressive subjects exposed to a consistently aggressive model and aggressive subjects exposed to an inconsistently aggressive model.
5. Non-aggressive subjects exposed to a consistently aggressive model will show a significantly greater increase from pre-test to post-test on intensity of shock administered than will non-aggressive subjects exposed to an inconsistently aggressive model.

METHOD

Subjects. Sixty male college students enrolled in introductory psychology classes at Oklahoma State University participated in this experiment for extra credit. The subjects were selected on the basis of their scores on scale 4 of the MMPI with the K correction which was administered to all introductory psychology students. The aggressive group was composed of 30 students whose T scores were 70 or above with K between 50 and 70. The non-aggressive group was composed of 30 students whose T scores are 50 or below with K between 50 and 70.

Apparatus. A shock apparatus similar in design to Buss's aggression machine was used (Buss, 1961). The apparatus consists of a 11.5 x 22.5 x 11.5 inch black box-shaped structure. The front panel contains a series of ten levers. Each lever is numbered in order from one to ten with the word 'mild' placed near Lever one and the word 'strong' placed near Lever ten. The panel also contains two lights which the experimenter controls from the confederate's room to signal the subject whether the learner's responses are correct or incorrect. Wires from the box extended into an adjoining room to a panel which has a series of ten lights corresponding to the levers on the box. A Standard Electric Timer (Type S1) was wired to the panel. The learner was able to record the intensity and duration of the shocks administered by the subject.

Lists of 40-50% Archer association value nonsense syllables and

lists of colors were used for the learning tasks (see Appendix A). Subjects read these colors or nonsense syllables to the learner through an intercom system. However, the learner was not able to communicate with the subjects.

Procedure. In order to avoid the possibility of subjects perceiving any connections between the inventory and the experimental tasks, instructors for each class were asked to administer the 4 and K scales of the MMPI on the pretext of collecting normative data. Within two weeks the experimenter returned to the classes with a list of names and told the potential subjects that their names were randomly selected.

On the waiting room was a "Please remain quiet until the experimenter arrives" sign, posted to decrease the interaction between the subject and confederates. As soon as the subject and two confederates, posing as other students, were seated in the waiting room, the experimenter arrived and proceeded to lead them all into the room containing the aggression box. The experimenter explained that the experiment was designed to study the effects of punishment on learning. In order to do this, the experimenter explained that two people would serve as the teachers, one using nonsense syllables and the other using color pairs, and the other person would be the learner. The subject was told that having two teachers would allow examination of the effects of punishment on the learning of different material using randomly selected instructors. Through the use of a rigged lottery system, each of them drew a card to create the impression that their roles in the experiment were due to chance. Because all the cards read 'teacher #1', the subject was assured of this position. One confederate reported he was the learner and the other confederate reported he was teacher number 2.

The experimenter then told the subject and confederates that shock would be involved in the experiment but that it would not be of sufficient intensity to cause physical harm. The experimenter then stated that although no physical harm can be caused by the shock, any one with reservations about participating in the experiment could leave and still receive class credit. If the subject agreed to stay¹, the confederate-learner was taken to the adjoining room, presumably to be hooked up to the experimental equipment. The experimenter requested that the teachers (subject and other confederate) remain quiet until he returned.

Upon returning to the experimental room approximately three minutes later, the experimenter explained how the aggression machine works and how the teachers were to present their learning task (see Appendix B for detailed instructions). He asked for teacher number one (subject) to take the chair in front of the aggression machine. The experimenter explained that the first teacher would use the colors lists (or nonsense syllables and the second teacher would use the nonsense syllables (or colors) lists to examine the effects of different teachers using punishment on subsequent learning. The lists were randomly assigned so that half of the subjects used one type of list and the remaining subjects gave the other type list. The subject was instructed to read the eight pairs on his list to the learner only once. On the succeeding three trials, the teacher only read the first item of each pair on the list. Because the experimenter was to be in the adjoining room with the learner, he would signal if the learner made a correct response or not.

¹One subject left at this point after admitting he was aware of the true nature of the study. He was repeating 1113 and had participated in a similar study the year before.

If the light labeled 'correct' appeared on the panel, the teacher would know that the learner had responded correctly. If the light labeled 'incorrect' appeared the teacher was to shock the learner as punishment for making a mistake. The teacher was told he could administer any intensity of shock he wished and informed that the higher the number the more intense the shock. After the shock the teacher was to read the correct response and continue to the next pair on the list.

The subject was informed to begin when the 'correct' light blinked twice on the panel. The experimenter left the experimental room and joined the learner-confederate in the adjoining room. The teachers were previously instructed not to converse during the learning trials. This series of trials served as the pre-test measure for all subjects.

At the completion of this pre-test measure the experimenter returned to the experimental room. The procedure differed slightly depending on which condition the subject was in. Subjects were assigned to one of three conditions: (a) exposure to no model, (b) exposure to a consistently aggressive model, or (c) exposure to an inconsistently aggressive model. Twenty subjects (ten aggressive and ten non-aggressive) were used in each group.

In the consistent model condition the experimenter informed the second teacher (confederate) that he would present his lists next. The confederate used only levers six, seven, and eight; delivering a mean shock intensity of 7.0, depressing the buttons for an average of 1.0 to 2.0 seconds. Following these trials the experimenter returned and informed the subject that he was to present his second list and indicated that the confederate would deliver his second list after the subject was finished. When the subject finished his second list trials,

the experimenter was ended.

In the inconsistent model condition the experimenter informed the second teacher (confederate) that he would present his lists next. The confederate used levers 1 through 10, also delivering a mean shock intensity of 7.0, depressing the buttons for an average of 1.0 to 2.0 seconds. Following these trials the experimenter returned and informed the subject that he was now to present his second list and indicated that the confederate would deliver his second list after the subject was finished. When the subject finished his second set of trials the experiment was ended.

In the no model condition the subject and confederate were informed that the amplifier in the other room was faulty and because it was important for the learner to hear the teacher, another amplifier must be used. The experimenter informed the teacher to wait for a few minutes while the other amp was hooked up. He returned after approximately the amount of time it took the model to present his list in the other two conditions. This equated the amount of time in the room and exposure to the experimenter for all groups. The subject was instructed to administer his second list and the confederate was told he would give his lists following that. When the subject completed his second list the experiment was ended.

The aggressive models delivered a total of 15 shocks. On the three successive trials, the learner made 7, 5, and 3 errors, respectively. The learner followed the same pattern of errors with all subjects and models. This gave the appearance that punishment had a beneficial effect on learning. Following the experiment all subjects were thoroughly debriefed (see Appendix C for debriefing outline).

Statistical Analysis. The means of the 15 pre-test and 15 post-test shock levels administered were obtained for each subject on each pre-test and post-test trial. The data was considered as a $3 \times 2 \times 2 \times 3$ analysis of variance with repeated measures on two factors. The factors involved were conditions (no model, consistent model, the inconsistent model), personality type (aggressive and non-aggressive), shock level (pre-test and post-test), and trials. Separate analyses were performed on the intensity and duration measures. A priori comparisons were made to test each of the hypotheses concerning the intensity measure. Relevant post-hock duration measure comparisons were made using the Tukey's HSD test procedure. For each of the six groups, Pearson product-moment correlation coefficients were calculated between the post-test minus pre-test shock intensity difference score and the post-test minus pre-test shock duration difference score using each subject's total score over the three trials.

RESULTS

The mean shock intensity score on each of the three pre-test trials and three post-test trials is shown in Table 1 for aggressive and non-aggressive subjects in the three modeling conditions. In Table 2, the summary table for the analysis of variance is presented. Unexpectedly, it was found that non-aggressive subjects administered higher shocks overall than aggressive subjects. In addition, the main effect for trials was significant indicating that the intensity of shock increased over trials. Tukey's test was used to investigate the differences between all pair-wise combinations, and it was found that the differences were significant for all possible pairs (see Table 3).

It was also found that more intense shocks were administered on the post-test than on the pre-test, although the significant model by pre-post interaction indicates the changes depend also on the modeling condition to which the subjects were assigned. A t test was used to test the effects of an aggressive model. It had been hypothesized that subjects exposed to an aggressive model would show a significantly greater increase in intensity of shock administered from pre-test to post-test than would subjects exposed to no model. The mean post-test minus pre-test shock intensity score for subjects in the consistent and inconsistent aggressive model conditions combined (1.62) was found to be significantly higher than the mean difference (0.38) obtained for subjects exposed to no model (t = 3.67, df = 58, $p < .001$). It had also been

TABLE 1
 MEANS FOR PRE-TEST AND POST-TEST SHOCK INTENSITY

Model	Pre-Test Trials			Post-Test Trials		
	1	2	3	1	2	3
	AGGRESSIVE SUBJECTS					
Consistent	3.66	4.27	4.57	4.34	5.10	5.63
Inconsistent	3.27	3.94	4.30	5.22	5.42	6.40
None	3.66	4.27	4.57	4.21	4.54	4.80
	NON-AGGRESSIVE SUBJECTS					
Consistent	4.77	5.56	5.97	5.86	7.03	6.73
Inconsistent	3.28	3.75	4.18	4.97	5.34	5.77
None	3.61	5.02	6.40	4.84	5.38	6.05

TABLE 2
SUMMARY TABLE FOR ANALYSIS OF VARIANCE OF SHOCK INTENSITY

Source	SS	df	MS	F
<u>Between Subjects</u>				
A (Aggressive subjects)	66.58	1	66.58	4.05*
B (Model type)	8.73	2	4.37	<1
AB	67.67	2	33.83	2.06
<u>Ss w. groups</u>	888.50	54	16.45	
<u>Within Subjects</u>				
C (Pre-test-Post-test)	131.14	1	131.14	56.19**
AC	2.31	1	2.31	<1
BC	31.33	2	15.66	6.71**
ABC	2.88	2	1.44	<1
Pre-post x <u>Ss w. groups</u>	126.02	54	2.33	
D (Trials)	93.07	2	46.53	27.06**
AD	.97	2	.49	<1
BD	2.73	4	.68	<1
ABD	12.23	4	3.06	1.77
Trials x <u>Ss w. groups</u>	185.75	108	1.72	
CD	3.88	2	1.94	1.56
ACD	.58	2	.29	<1
BCD	4.94	4	1.23	<1
ABCD	2.22	4	.57	<1
Pre-post x trials x <u>Ss w. groups</u>	134.09	108	1.24	

*p < .05

**p < .01

TABLE 3
 TUKEY'S TEST FOR TRIALS ON THE INTENSITY MEASURE

Trials		1	2	3
	Means	4.18	4.85	5.43
1	4.18	-	.67*	1.25*
2	4.85		-	.58*
3	5.43			-
			r=2	r=3
			Critical difference .48	.57

*p < .05

hypothesized that subjects exposed to a consistently aggressive model would show a significantly greater increase in shock intensity from pre-test to post-test than subjects exposed to an inconsistently aggressive model, but the mean differences (1.51 and 1.73 for the consistent and inconsistent conditions, respectively) were found not to be significantly different ($t = 0.50$, $df = 38$, $p > .05$).

The remaining three hypotheses were also investigated using t tests, but no significant differences were obtained. The mean pre-test intensity score for aggressive subjects (3.71) was not significantly higher than the mean pre-test score (4.73) for non-aggressive subjects ($t = 1.96$, $df = 58$, $p > .05$). Also, the pre-post intensity differences for aggressive subjects exposed to a consistently aggressive model (1.91) was not significantly different from the mean score (1.84) obtained by aggressive subjects exposed to an inconsistent model ($t = 0.97$, $df = 18$, $p > .05$). Lastly, non-aggressive subjects exposed to a consistent model did not show a greater pre-test to post-test increase in shock intensity than non-aggressive subjects exposed to an inconsistent model ($t = 1.02$, $df = 18$, $p > .05$). The mean differences were 1.11 and 1.62 for non-aggressive subjects in the consistent and inconsistent model conditions, respectively.

The mean shock duration score on each of the three pre-test and three post-test trials is shown in Table 4 for aggressive and non-aggressive subjects in each of the modeling conditions. In Table 5, the summary table for the analysis of variance is shown. The significant pre-test versus post-test difference must be interpreted in light of the significant personality type by pre-post by trials interaction. Tukey's test was used to test the significance of the differences between

TABLE 4
 MEANS FOR PRE-TEST AND POST-TEST SHOCK DURATION
 (in seconds)

Model	Pre-Test Trials			Post-Test Trials		
	1	2	3	1	2	3
AGGRESSIVE SUBJECTS						
Consistent	.68	.70	.70	.75	.75	.80
Inconsistent	.80	.82	.85	.95	.87	.93
None	.87	.95	.86	.86	.79	.90
NON-AGGRESSIVE SUBJECTS						
Consistent	.90	.89	.87	.90	.99	.95
Inconsistent	.87	.82	.87	.87	1.02	1.02
None	.80	.80	.81	.91	.96	.91

TABLE 5
SUMMARY TABLE FOR ANALYSIS OF VARIANCE OF SHOCK DURATION

Source				
<u>Between Subjects</u>				
A (Aggressive subjects)	.49	1	.49	<1
B (Model type)	.27	2	.13	<1
AB	.62	2	.31	<1
<u>Ss</u> w. groups	27.56	54	.51	
<u>Within Subjects</u>				
C	.48	1	.48	9.62**
AC	.09	1	.09	1.69
BC	.07	2	.03	<1
ABC	.13	2	.07	1.32
Pre-post x <u>Ss</u> w. groups	2.74	54	.05	
D	.04	2	.02	1.25
AD	.04	2	.02	1.27
BD	.02	4	.01	<1
ABD	.02	4	.01	<1
Trials x <u>Ss</u> w. groups	1.62	108	.01	
CD	.03	2	.01	<1
ACD	.16	2	.08	4.94**
BCD	.03	4	.01	<1
ABCD	.07	4	.02	<1.05
Pre-post x trials x <u>Ss</u> w. groups	1.80	108	.02	

**p < .01

aggressive and non-aggressive subjects on each of the three pre-test and three post-test trials (see Figure 1). None of these differences were statistically significant, however non-aggressive subjects tended to administer shocks of longer duration than aggressive subjects (see Table 6).

Pearson product-moment correlation coefficients were calculated between the post-test minus pre-test shock intensity difference score and the post-test minus pre-test shock duration difference score using each subject's total score over the three trials. These coefficients are shown in Table 7 for aggressive and non-aggressive subjects in each of the modeling conditions. The negative coefficient obtained for the aggressive subjects in the no model condition is significant at the .05 level. For these subjects, as intensity of shock administered from pre-test to post-test increased, the duration of that shock decreased.

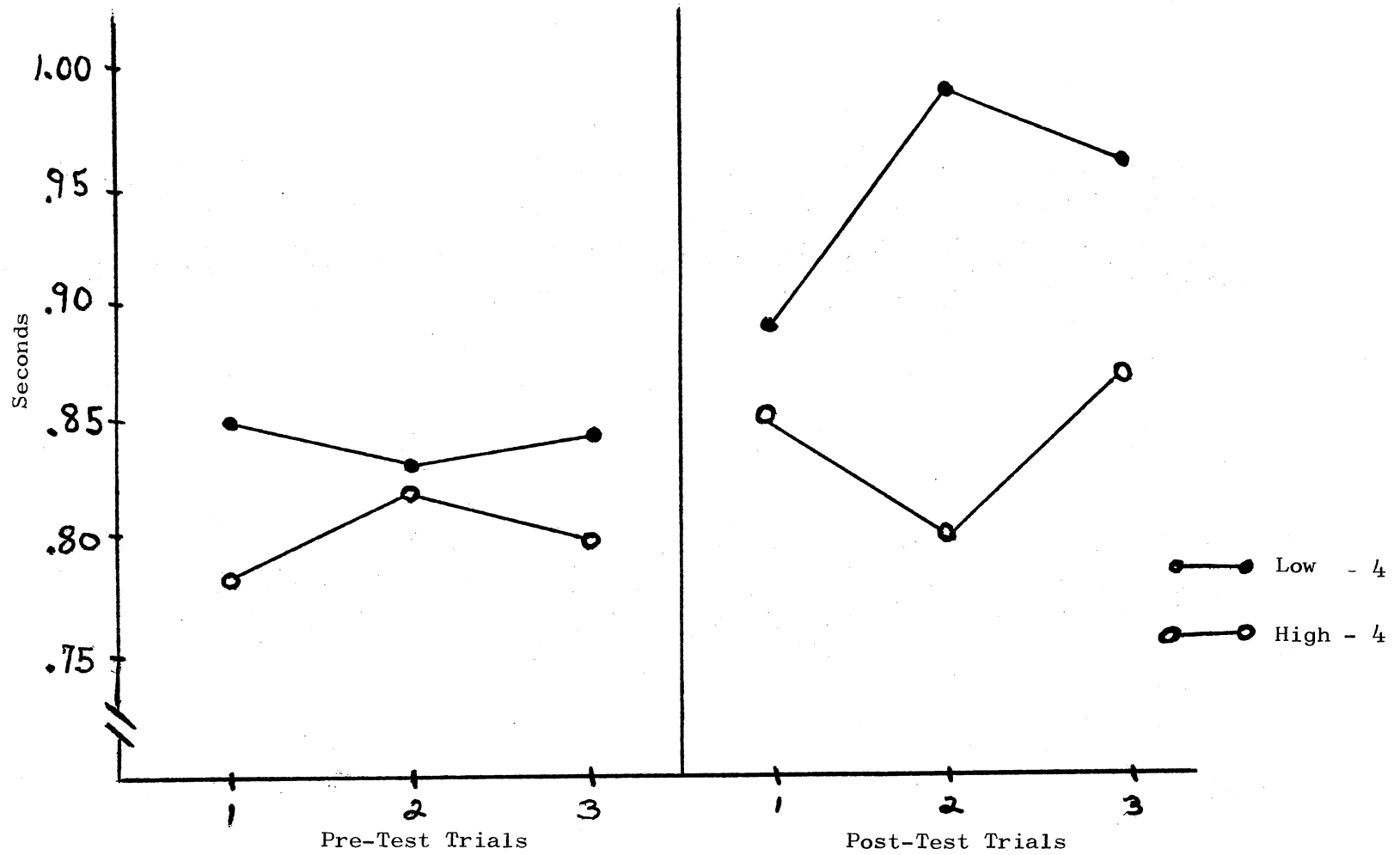


Figure 1. Graphic representation of the personality type x pre-post x trials interaction

TABLE 6

MEAN DIFFERENCE SCORES OF RELEVANT COMPARISONS FOR TUKEY'S TEST
ON THE PERSONALITY TYPE x PRE-POST x TRIALS
INTERACTION ON THE DURATION MEASURE

	PRE-TEST Trials		
	1	2	3
Low 4	.85	.83	.85
High 4	.78	.82	.80
Difference	.07	.01	.05

	POST-TEST Trials		
	1	2	3
Low 4	.89	.99	.96
High 4	.85	.80	.87
Difference	.04	.19	.09

$r = 2$

critical difference = .21

TABLE 7
CORRELATION COEFFICIENTS OF DIFFERENCE SCORES OF
INTENSITY AND DURATION

	Aggressive	Non-aggressive
Consistent Model	.40	.12
Inconsistent Model	-.23	-.005
No Model	-.67*	.15

*p < .05

DISCUSSION AND CONCLUSIONS

The hypothesis that aggressive subjects would administer more intense shocks than non-aggressive subjects on the pre-test measure was not supported. The difference, though not significant, was in the opposite direction from that expected. One explanation of this finding could be that there was approximately a two-week period from the administration of scale 4 of the MMPI to the subject's participation in this study and perhaps subject's scores were no longer accurate indicators of their aggressiveness. However, the test-retest reliability of scale 4 would suggest this time period should not have affected the accuracy of the assignment of subjects into the aggressive and non-aggressive categories. Butcher and Dahlstrom (1964) report a test-retest reliability of .77 over a one to two-week period for male college students on scale 4.

In contrast to the present study, Wilkins et al. (1974) found that aggressive subjects gave higher intensity shocks on the pre-test than did non-aggressive subjects. One major difference between this study and Wilkins et al. is that a live model was used in this study, and he was in the room with the subject during the pre-test administration. The subject was alone during the pre-test in the Wilkins et al. investigation. This difference may possibly account for the differing result. It is possible that the effect of the model's presence on the subjects during the pre-test was to 'wash out' any personality characteristic

differences between aggressive and non-aggressive subjects. It may be that subjects are less willing to administer intense shocks to another person if their behavior is being observed. If this were the case, it would help account for the results of Nieberding (1973) who also failed to find significant differences between aggressive and non-aggressive subjects on the intensity measure. The design of Nieberding's study was similar to the present one in that the person who later became the aggressive model was present while subjects administered shocks to the confederate.

When both pre-test and post-test data was examined, it was found that non-aggressive subjects gave significantly higher intensity shocks than aggressive subjects. This finding is directly opposite to the anticipated result. It is impossible to say precisely why this occurred. One explanation, though purely speculative, is that the aggressive subjects are more aware of their aggressive tendencies and suppress those tendencies in the presence of the live model. Wilkins et al. (1974) state that their results and debriefing comments made by aggressive subjects suggest the possibility that aggressive subjects are more defensive and tend to guard against displaying aggressive behavior when directly provoked. Their suggestion would be consistent with the explanation suggested here.

It was found that exposure to a model, whether consistently aggressive or inconsistently aggressive, resulted in a significantly greater increase in intensity of shocks administered from pre-test to post-test than no exposure to a model. This finding, that stimulus conditions are more important determinants of observer behavior in modeled aggression studies than the observer's individual personality

characteristics, is in agreement with previous experimenters (Baron and Kepner, 1970; Waldman and Baron, 1971; Nieberding, 1973).

The major purpose of this study was to determine whether the consistency of an aggressive model would affect the subsequent aggressive behavior of an observer. The assumption was made that a reduction in the consistency of the model would reduce the demand characteristics and allow the emergence of personality characteristics in the observer. Two hypotheses were proposed. The first was that there would be no differential pre-post changes in intensity of shock administered by aggressive subjects exposed to a consistently aggressive model and aggressive subjects exposed to an inconsistently aggressive model. The second was that non-aggressive subjects exposed to a consistently aggressive model will show a significantly greater increase from pre-test to post-test on intensity of shock administered than would non-aggressive subjects exposed to an inconsistently aggressive model. It was reasoned that aggressive subjects, being more assertive types, would administer a high level of shock on the pre-test and, not being affected by the model's demand characteristics, would administer a similar or slightly higher level on the post-test, regardless of the consistency of the model. Non-aggressive subjects were expected to administer a low level of shock intensity on the pre-test because of their non-aggressive nature. When exposed to the consistent model the non-aggressive subjects, being more passive to others, were expected to be influenced by the demand characteristics of the model's consistent intensity administration and show a large increase in shock intensity on the post-test. However, when exposed to the inconsistent model, and the reduced demand characteristics presumed present with such a model, the

non-aggressive subjects were expected to administer similar shocks on the post-test to those on the pre-test.

The results showed that a reduction in the consistency of the model did not result in the personality characteristics of the subjects becoming more important determinants of their behavior. This would suggest that there were no differences in the demand characteristics perceived by the subject whether the model was consistent or inconsistent. The reason for this may be procedural. With the apparatus used in this study, it was necessary to make both models look aggressive in order to include the consistency variable. The shocks ranged from one to ten and aggressiveness was held constant, so to equate means with the available shock range it was necessary for the inconsistent model to deliver several high intensity shocks for every low intensity shock. The fact that both models gave many high intensity shocks seems to have most affected the subjects behavior and not the consistency with which they were used. It is possible that the subjects, in effect, 'keyed' on the intensity of the shocks given. In fact it is very possible that both models appeared aggressive to the subjects, due to the number of high intensity shocks given, rather than their consistency.

It was found that the intensity of shocks administered increased for all groups as trials progressed. Previous research (Baron and Kepner, 1971; Buss, 1963, 1966; Henry, 1973) all report an upward trend in shock intensity over trials. This seems to be a function of the increasing desensitization to administering shocks as a form of punishment. Another possibility is that subjects became less inhibited by the live model as the experiment proceeded.

Up to this point the discussion has focused on the shock intensity

measure. For the other dependent variable, shock duration, no statistically different results were obtained. There was a consistent tendency for non-aggressive subjects to administer shocks of longer duration than aggressive subjects. Since it was the non-aggressive subjects who tended to administer shocks of the longer duration, these results appear to be consistent with the intensity data. However, results obtained on the duration measure must be interpreted cautiously. It was originally intended as a rather subtle measure of aggression, and subjects were therefore not informed as to whether or not continued depression of the levers meant continued deliverance of shock. No reference was made to continued depression of levers during instructions to subjects. As a result, it is not known whether subjects assumed shock duration was automatically controlled by the shocking mechanism or not. Duration measure findings in modeled aggression research have not been consistent, and previous research has also indicated some confusion about the meaning of this measure (Nieberding, 1973; Henry, 1973).

The correlation coefficient of the pre-test to post-test intensity and duration difference measures for the aggressive subjects not exposed to a model suggests the possibility of a compensation effect between these two measures, as suggested by Rule and Percival (1971). When the subjects in this condition decreased the intensity of the administered shocks from pre-test to post-test, they increased the duration of the shocks and vice versa. This interpretation is very tenuous, however, as only one of six such comparisons produced a significant result. Nieberding (1973) found positive correlations between intensity and duration measures for his aggressive subjects. On the other hand Henry (1973) has suggested that different measures of aggression, such as the

intensity and duration measures used in this study, may not be comparable. The results of the present study suggest that dependent measures based on the product of these two measures are of questionable validity.

This study opens two major avenues for future research. The first concerns the consistency issue investigated by this study. The consistency of the models in this study may not have been sufficiently different. Several methodological changes could be made to allow further study of this variable. A shock box could be used which allows a greater range of shock intensities, thereby allowing better appearance of consistency and inconsistency. It might help to allow the subjects to experience sample shocks of various intensities to give them a better idea of the range of the intensities. There is always the possibility of developing different measures of aggression than the shock box to see if the findings such as those of this study will generalize to other methods of measuring modeled aggression. There is also a definite need to investigate the differences in the results of this study and of those which did not use a live model. The apparent discrepancy between Wilkins et al. (1974) and Nieberding (1973) may not be due to the demand characteristics resulting from an aggressive model, but possibly to the inhibitory effects of an observer on aggressive subjects.

SUMMARY

Modeled aggression research has been conducted in many different situations, both in the field and in the laboratory. Recent laboratory studies have concentrated on the effects of a model on subjects with differing amounts of aggressive tendencies. These studies have produced contradictory results. One study showed that aggressive subjects will administer higher intensity shocks to a confederate than will non-aggressive subjects both before and after exposure to a violent news tape. Another study found no differences in the intensity of shocks administered between aggressive and non-aggressive subjects following exposure to a highly consistent, aggressive model.

This study examined the effect of model consistency on the subsequent aggressive behavior of aggressive and non-aggressive observers. Half of the sixty male college students used in this study were aggressive types and half were non-aggressive types as determined by their score on scale 4, the psychopathic deviate scale, of the MMPI. Ten aggressive and ten non-aggressive subjects were exposed to either a consistently aggressive model, an inconsistently aggressive model or no model at all. Pre-test and post-test differences in the intensity and duration of shock which the subject was willing to administer to a confederate were used as measures of aggression. The assumption was made that if the model behaved inconsistently, this would reduce the demand characteristics of the situation and rather than follow the model's

behavior, subjects would be governed more by their own personality characteristics. Thus, in this condition, aggressive subjects would behave aggressively and non-aggressive subjects would show little aggressive behavior.

On the pre-test measure it was found that there was no difference between aggressive and non-aggressive type subjects on the intensity measure. Overall, it was found that exposure to a model, whether consistently aggressive or inconsistently aggressive, resulted in a significantly greater increase in intensity of shocks administered from pre-test to post-test than no exposure to a model, regardless of the personality type of the subjects. This finding was consistent with previous research in this area which showed that stimulus conditions are more important determiners of observers behavior in modeled aggression studies than the observer's individual personality characteristics. A reduction in the consistency of the model did not result in the personality characteristics of the subjects becoming more important determinants of their behavior. This finding suggested that there were no differences in the demand characteristics perceived by the subject whether the model was consistent or inconsistent. Because of the procedure used in this study it was possible that subjects simply perceived both types of models as aggressive and followed that example, regardless of the consistency of the model's behavior.

Future research should be designed to further investigate the consistency question considered in this paper. It is possible that there was not sufficient difference between the consistent and inconsistent models' behavior in this study. A shock box allowing a greater range of shock intensities would aid this effort. It might also help if

subjects were allowed to experience the range of shock intensities they believed they were administering. The use of a live model in this study may have produced some of the differences between this study and other modeled aggression studies which used other types of models. The inhibitory effects which a live model may have on the aggressive behavior of the subject is an area in need of study.

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APPENDIX A

PAIRED ASSOCIATES LIST FOR TEACHERS

Nonsense syllable list #1

1. BEM - DUH
2. DIB - QIK
3. WOH - MAB
4. LUF - DAK
5. ZEK - JIV
6. VOS - KEW
7. FID - TAY
8. SOV - WEV

Colors list #1

1. RED - GREEN
2. YELLOW - BLUE
3. ORANGE - BROWN
4. PURPLE - BLACK
5. WHITE - PINK
6. GREY - SILVER
7. VIOLET - TAN
8. GOLD - BRONZE

Nonsense syllable list #2

1. VIT - MEK
2. CAG - JUM
3. PIQ - TUS
4. ZEL - FEV
5. LUT - JAV
6. PEB - NAS
7. RAQ - WUD
8. CES - PIM

Colors list #2

1. BLACK - WHITE
2. PINK - GREY
3. SILVER - VIOLET
4. TAN - GOLD
5. BRONZE - RED
6. GREEN - YELLOW
7. BLUE - ORANGE
8. BROWN - PURPLE

APPENDIX B

INSTRUCTIONS

This experiment is designed to study the effects of punishment on learning. In order to do this, I am going to have two of you serve as teachers, one using nonsense syllables and the other using color pairs. The other person will serve as the learner. To determine fairly the role each of you will take in this experiment, I have placed three slips of paper in this cup - one reads 'teacher #1', one reads 'teacher #2' and the third reads 'learner'. I would like you to reach in and draw a slip of paper.

(Experimenter asks each what assignment they received)

You will maintain this assignment through the entire experiment. At this time I am required to inform you that shock will be used in this experiment, however, I want to assure you that at no time will the shock be of sufficient intensity to cause physical harm. Regardless of the intensity and the fact that no physical harm will be caused, anyone with reservations about participating in this experiment may leave and still receive class credit.

(If subject agrees to stay) Now, which of you was the learner? Yes, please come with me into the adjoining room where I will attach you to the experimental equipment. While I am gone I must ask that the two of you refrain from any discussion.

General Instructions:

This device (indicating aggression box) will be used by you to administer shocks to the learner if and when he makes an incorrect response. Each lever delivers a different intensity shock, ranging from mild to strong. I would remind you that even at its highest intensity the shocks will not do physical harm to the learner. Each of you will present a list of eight paired colors or nonsense syllables to the learner in the other room by way of this intercom system. A nonsense syllable is a three letter word made up of consonant - vowel - consonant. When presenting the nonsense syllables you will simply pronounce it. For example J-U-M would be 'JUM'. First you will read both colors or both nonsense syllables in all eight pairs on the list. Then you will read only the first color or nonsense syllable of each pair. I will instruct the learner that he is to attempt to give the second color or nonsense syllable. I will be in the other room with the learner and will signal you whether the response was correct or not. You will not hear the response because the intercom system is only a one way system.

If the response is correct you are to continue to the next pair on the list. If the response is incorrect you are to administer some intensity of shock by depressing one of these levers. Following this you are to read both members of the pair so the learner will learn the correct response. Then proceed to the next pair. You will present each list three times. In this manner I can examine the effects of punishment on the learning of different material using randomly selected instructors. You will each present two different sets of paired colors or nonsense syllables. Any questions?

I realize that these instructions have been long and you may be slightly confused as to what you are to do, therefore I am going to give you a few practice trials in which you will do everything except give the actual shocks. Now which of you is teacher #1. Please sit here (in front of shock box). This is the practice list. As I said you will read all eight pairs one time, then you will proceed to read the first color or syllable in the pair and wait for the correct or incorrect light. If it is correct, go on. If it is incorrect you deliver a shock and then read both colors or syllables in the pair. Then you proceed. You will go through the list three times.

(To confederate) Please pay attention as you will be doing the same thing. However, I do ask that you refrain from talking during the experiment.

Now, before we go into the real experiment and I go into the room with the learner, let's try the practice list. Go ahead and I will correct you if necessary.

That was fine. Now we will begin the actual experiment. You will do as you did with the practice trials except now you will deliver the shocks.

[Additional instructions to No Model Condition subjects]

(After first list presentation) (To subject) I would now like you to present your second list using the same procedure as before. Read all eight pairs first, the first word in each pair. Again, deliver shock for incorrect responses and read the correct pair. I would like you to also present this list three times.

(To confederate) Please observe if you wish but refrain from talking. You will present your lists next.

[Additional instructions to either model condition subjects]

(After first list presentation) (To confederate) I would now like you to present your first list in the same way the first teacher did. (To subject) You may observe if you wish but please do not talk to each other.

(Experimenter leaves - confederate presents list -
experimenter returns)

(To subject) I would now like you to present this second list using the same procedure as before.

(To confederate) You may observe if you wish but please do not talk to each other.

APPENDIX C

DEBRIEFING OUTLINE FOR SUBJECTS

I. Would you tell me what you thought about the experiment?

What did you feel the purpose of this experiment was?

Did you have any feelings about participating in this study?

II. How did you feel about delivering shocks to the learner in the next room?

What did you think about the other teacher's delivering shocks?

Did you at any time feel that you were not really delivering shocks?

III. Inform subject that no shocks were delivered

True purpose of experiment - to see if different types of people will react differently to a model delivering shock

Explain confederates and modeling types, pretest

IV. Explain how subjects were chosen for study

High 4 - businessmen and graduate students score higher.

assertive, unemotional and in some areas

non-conforming

Low 4 - easy going and conventional

V. Explain total hypothesis

Will different types persons (High or Low 4) react differently to a model. High 4 give high shock and low 4 give low shock regardless of model or will model override the persons basic style. Perhaps there will be differences between model conditions and scale 4 score.

- VI. Ask subjects for comments or ways to improve experiment. Explain importance of study, forced use of deception.
- VII. Ask subject not to reveal purpose of the study.

APPENDIX D

RECORD FORM FOR SHOCKS

Subject List #1 _____ Subject Type _____
 Model Group _____

Trial 1		Trial 2	
level	duration	level	duration
1. <u>NO SHOCK</u>	<u>NO SHOCK</u>	1. <u>NO SHOCK</u>	<u>NO SHOCK</u>
2. _____	_____	2. <u>NO SHOCK</u>	<u>NO SHOCK</u>
3. _____	_____	3. _____	_____
4. _____	_____	4. _____	_____
5. _____	_____	5. _____	_____
6. _____	_____	6. _____	_____
7. _____	_____	7. _____	_____
8. _____	_____	8. <u>NO SHOCK</u>	<u>NO SHOCK</u>

Trial 3	
level	duration
1. <u>NO SHOCK</u>	<u>NO SHOCK</u>
2. <u>NO SHOCK</u>	<u>NO SHOCK</u>
3. _____	_____
4. _____	_____
5. <u>NO SHOCK</u>	<u>NO SHOCK</u>
6. <u>NO SHOCK</u>	<u>NO SHOCK</u>
7. _____	_____
8. <u>NO SHOCK</u>	<u>NO SHOCK</u>

VITA

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Master of Science

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