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AN ATTRIBUTIONAL ANALYSIS OF AGGRESSIVE
REACTIONS TO PUNISHMENT

by

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the University of Manitoba in partial fulfillment of the requirements
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TABLE OF CONTENTS

CHAPTER		PAGE
	ACKNOWLEDGEMENTS.....	iv
	TABLE OF CONTENTS.....	v
	LIST OF TABLES.....	viii
	LIST OF APPENDICES.....	ix
I	INTRODUCTION AND OVERVIEW.....	1
II	AGGRESSION, ATTRIBUTION, AND LOCUS OF CONTROL: GENERAL ORIENTATIONS.....	5
	Heider's Theory of Attribution.....	9
	Review of the Literature Related to Attribution Theory.....	16
	Determinants of Attribution.....	16
	The Problem of How Attributions Influence Behaviour.....	18
	Consequences of Differential Attributions.....	19
	Rotter's Internal Versus External Locus of Control.....	22
III	THE THESIS PROBLEM.....	24
	Attributions Regarding Task Failure and Subsequent Aggression.....	24
	Attributions Concerning the Punishing Agent's Behaviour and Subsequent Aggression.....	26
	Locus of Control and Attributions for Task Failure.....	27
	Locus of Control and Aggressive Behaviour.....	29
	Thesis Predictions - Summary.....	32
IV	METHOD.....	34
	Overview.....	34

TABLE OF CONTENTS (continued)

CHAPTER	PAGE
Subjects.....	35
Apparatus and Laboratory Setting.....	36
Tests.....	37
Performance Task.....	38
Testing Procedure.....	38
Laboratory Procedure.....	39
Independent Variables.....	46
Dependent Measures.....	50
Independent Manipulation Check and Derived Variables.....	50
V RESULTS.....	52
Hypothesis Three and the Effectiveness of the Independent Manipulations.....	53
The Independent Variables Effect on Aggression.....	57
Re-analysis of Data Using Subject's Phenomenological Attributions.....	63
The Effects of the Independent Variables on Anagram Performance.....	66
Summary of the Primary Findings.....	67
VI DISCUSSION.....	68
Hypothesis One.....	68
Limitations of the Frequency Data as a Test of Hypothesis One.....	71
Hypothesis Three.....	72
Hypothesis Four.....	74
Problems and Implications.....	75
Summary.....	77

TABLE OF CONTENTS (continued)

CHAPTER	PAGE
VII SUMMARY.....	79
REFERENCES.....	82
APPENDICES.....	89

LIST OF TABLES

	PAGE
Table 1: Analysis of Variance of Subject's Attributions for Task Failure as a Function of the Experimental Manipulations and Locus of Control.....	55
Table 2: Attribution Means for the Four Factors and Three Derived Variables as a Function of the Luck-Task difficulty - Ability-Effort Treatments and Locus of Control.....	56
Table 3: Analysis of Variance of the Intensity Measure of Subject's Aggressiveness as a Function of the Experimental Manipulations and Locus of Control.....	58
Table 4: Analysis of Variance of the Frequency Measure of Subject's Aggressiveness as a Function of the Experimental Manipulations and Locus of Control.....	58
Table 5: Relative Levels of Aggression Predicted for Each Group.....	60
Table 6: Mean Level of Aggressiveness Using the Intensity Measure as a Function of the Experimental Manipulations.....	61
Table 7: Mean Level of Aggressiveness Using the Frequency Measure as a Function of the Experimental Manipulations.....	61
Table 8: Multiple Comparisons of the Intensity Means Presented in Table 6 Using Dunn's Procedure.....	62
Table 9: Multiple Comparisons of the Frequency Means Presented in Table 7 Using Dunn's Procedure.....	62
Table 10: Analysis of Variance of the Intensity of the Subject's Aggressiveness as a Function of (a) the Subject's Phenomenological Attributions for Task Failure as Measured by the Derived EXT-INT Variable and (b) the Responsible - Non-responsible Punisher Experimental Manipulation.....	64
Table 11: Analysis of Variance of the Frequency of the Subject's Aggressiveness as a Function of (a) the Subject's Phenomenological Attributions for Task Failure as Measured by the Derived EXT-INT Variable and (b) the Responsible - Non-responsible Punisher Experimental Manipulation.....	65

LIST OF APPENDICES

	PAGE
Appendix A: Diagram of Equipment Setup.....	90
Appendix B: Diagram of Laboratory Layout.....	91
Appendix C: Rotter's Internal-External (I.E.) Locus of Control Scale.....	92
Appendix D: Anagram Task.....	95
Appendix E: Questionnaire A - All Anagram Subjects.....	99
Appendix F: Questionnaire B - Anagram Subjects Who Fail.....	100
Appendix G: Paired-Associates Task.....	101
Appendix H: Letter to Participants.....	102
Appendix I: Analysis of Variance of Intensity Measure Using Data from All Subjects Including those who were Eliminated.....	103
Appendix J: Analysis of Variance of Frequency Measure Using Data from All Subjects Including those who were Eliminated.....	104
Appendix K: Analysis of Variance of Subject's Attributions of Responsibility - Non-responsibility for the Punishing Agent's Behaviour.....	105
Appendix L: Supplementary Hypotheses and Experimental Results.....	106

CHAPTER I

INTRODUCTION AND OVERVIEW

Everyday the newspaper headlines highlight occurrences of criminal offenses involving aggressive behaviour. Underneath these captions, the papers inform that the assailants were drunk, or came from broken homes, or had just been released from jail.

And everyday readers wonder why there is so much violence. They ask why being sentenced to jail does not seem to make a difference. They question whether the alcohol or the unhappy circumstances of the offender are to blame for his behaviour. Or they may simply conclude that the offender knew what he was doing and chose to be violent.

Let us continue pursuing the layman's thinking in reference to violent behaviour. Perhaps he concludes that offenders should be punished more when they are responsible for their misdeeds, whereas he feels that offenders should be punished less when realities over which the offenders had no control influenced their misdeeds. This distinction is clearly evidenced throughout British Common Law tradition. For example, the common law has always based severity of punishment in the case of murder on the degree to which the subject is felt to be responsible; to what degree the misdeed was felt to be due to the murderer's own intention rather than due to extenuating circumstances over which he had no control.

Changing the context somewhat, one wonders what the assailant is thinking. He may accept personal responsibility for his aggressive behaviour and he may be prepared to "take the rap." Or he may emphasize that he had no intention to harm anyone, that he accidentally bumped into the person and that the "victim" subsequently hit him so he protected himself, or he may blame the offence on bad luck, on his drinking, or on some other factor external to himself for which he is not prepared to accept responsibility. And because he is not at fault, because he does not see himself as the cause of the offence, he cannot see why he should be punished. The punishment does not make sense, it may seem almost like someone is "assaulting" him without cause.

Although everyone knows that punishment is never easily accepted, we might expect that the person who is punished when he does not see himself as being at fault might react differently from the person who is prepared to "accept the rap."

When the implications of the above section are considered, it seems evident that persons react to their worlds from within a causal framework. A meaningfulness or purposiveness in behaviour seems to be an implicit assumption. Further, there appears to be a dichotimization within the causal analysis, certain behaviours being attributed to factors which seem personal whereas others appear to be impersonal or external to the actor. And assignment of responsibility for a behaviour seems to depend upon whether the causes of behaviour are seen to be personal, or are seen to be caused by factors over which the actor is thought to have limited

control. Finally, it seems evident that man's actions and reactions to others and to their environment seems to be conditioned or to depend to a degree upon the particular assignment of causality.

The assignment of causality which occurs need not and often may not correspond with the real or actual causes of behaviour. It is rather a causality based upon man's perceptions of and beliefs about his world. It can perhaps best be labelled as a phenomenological causality because it is conditioned by the manner in which the "common-man" views his world.

Although one of the primary goals throughout the history of psychology has been to explain the causes of man's behaviour, it is only within the last two decades and primarily in the last several years that the implications of phenomenological causal analysis or what has been described as "common-sense psychology" or "naive causal analysis" has become the subject of rigorous concern for the experimental psychologist. The impetus for this concern seems to be attributable to Heider's theory of attribution (1958) on the one hand, and to Rotter's social learning theory (1954) on the other.

It is within the context of these social-psychological theories that this presentation will examine the possible interrelationships of phenomenal causality and punishment as a possible determinant of aggressive behaviour. It will attempt to assess whether persons' perceptions of causality and their beliefs as to responsibility for their own behaviour and for the behaviour of others may be one factor which can help explain aggressive behaviour such as that which is described when we read our newspaper headlines.

The proposed examination of the thesis question will be presented in the following manner. The meaning of aggression will be explored in the first section and studies that analyze the inter-relationships of aggressive behaviour and subjective perceptions of causality will be presented. This will be followed by a fairly detailed explanation of both Heider's and Rotter's theories, and of the related research which these theories have precipitated. The implications of the research on aggression are interpreted within the context of these theories.

In the next section of the thesis a number of hypotheses are proposed, these predictions evolving out of an integration of the theory and research presented in the previous section. This will be followed by a section which presents the experimental methodology used to test the proposed hypotheses. An analysis of the results of the thesis experiment and a discussion of the meaning of the obtained results are then presented. The thesis is summarized in the concluding section.

CHAPTER II

AGGRESSION, ATTRIBUTION, AND LOCUS OF CONTROL:

GENERAL ORIENTATIONS

It is not within the framework of this presentation to review or elaborate the massive numbers of theories and explanations related to aggression. Rather, the area of concern is to present a general definition of aggression and relate this definition to concepts such as anger and hostility. Pastore's (1950) criticism of the frustration - aggression hypothesis will then be presented as one reason for interpreting aggression within the context of attribution theory. A brief overview of attribution theory and research will be presented and the related concept of locus of control will be introduced.

"Aggression" can be defined as a response that delivers a noxious stimulus to another organism.

In "angry aggression," the reinforcer is pain or injury of the victim. In "instrumental aggression," the reinforcer is a reward such as food, money, or removal of aversive stimuli rather than the victim's pain. Both "angry" and "instrumental aggression" may occur simultaneously as in the case where an aggressive response is triggered by noxious stimulation such as attack, where the aggression, if successful is reinforced by the attacker's pain and the removal of the noxious stimulus (Buss, 1961). Yet certain behaviours that

involve the delivery of noxious stimuli are typically not deemed aggressive because the reinforcer is a socially accepted goal; e.g., dentists treating patients, parents disciplining children. The accidental delivery of noxious stimuli is also not considered aggressive.

"Anger" is an emotional response whose characteristics include autonomic activation, intensification of aggressive behaviour, and a physiological tension state (Buss, 1961). Whereas both aggressive behaviour and the emotional response of anger occur in a brief time period, "hostility" is an attitudinal response which endures which Buss (1961, p. 12) describes as "an implicit verbal response involving negative feelings (ill will) and negative evaluation of people and events." It involves the observing and labelling of the situations which lead to an anger response. Long after the anger has dissipated, the attendant attitude can remain (having the dispositional quality of an internal attribute) which may at some future point serve as an impetus for anger and/or aggressive behaviour.

Frustration has been considered a primary antecedent of aggression by many theorists. Dollard, Doob, Miller, and Sears (1939) theorized that "aggression is always a consequence of frustration" (although Miller, 1941, emphasized that aggression need not invariably follow every frustrating experience). For these theorists, the strength of the frustrated goal response and the anticipation of punishment are the primary determinants of aggression.

Pastore (1950) raised the question of whether "when aggression is related to frustration, is it the frustration per se which has

produced the aggression" (p. 272). He concluded that "although frustration may lead to aggression, the factor of reasonableness or unreasonableness of the situation, from the point of view of the subject, is involved as a necessary condition" (p. 273). Pastore did not offer any theoretical justification for his conclusion, his conclusion seemingly being based simply upon reviewing the various "frustrating situations" cited in the arguments of the Yale Group in their writings, and finding that the described frustrating situations tended to be arbitrary or unreasonable.

A number of research studies have explored Pastore's assertion. Pastore (1952) examined the frustrating situations used in research by Doob and Sears (1939), and found that the questionnaire items seemed to reflect arbitrary or unreasonable frustrations. He therefore developed two sets of questions, half of which paralleled those of Doob and Sears' study and the other half being changed somewhat in the direction of non-arbitrariness. The sets were presented in randomized orders and were rated according to the justification of the described situation - i.e., (1) completely justified, (2) partially justified, (3) partially unjustified, and (4) completely unjustified. The results evidenced that the arbitrary situations were clearly seen to be unjustified frustrations. Having assessed that persons could readily make discriminations between arbitrary - non-arbitrary frustrations, he then presented the two sets of situations to 131 college students and asked them how they would respond to the outlined frustrations. The responses were then categorized according to aggression (overt - covert), non-aggression, and

non-scoreable. Agreement in categorization between the two judges (the author and a graduate student) was 80% with further discussion decreasing the unscoreable items to 5%. Using these data, it was found that following arbitrary frustration, significantly more aggression was evidenced than following non-arbitrary frustration. Pastore conducted a further questionnaire study on aggression using 47 subjects. He had subjects respond to the two sets of items by choosing one of the following: (1) I would feel hostile and would show it in my behaviour, (2) I would feel hostile and would not show it in my behaviour, (3) I would not feel any hostility, and (4) I would try to do something about the situation without feeling hostile. The results were in the anticipated direction, replicating the findings of the first experiment. (This latter measure would definitely seem preferable when experimenter bias effects are considered.)

Cohen (1955) provided further support for Pastore's hypothesis. His experimental design closely paralleled that of Pastore's final study, the dependent measure of aggression being the same four categories of response developed by Pastore. In addition to providing further validation for Pastore's work, Cohen's intent was to assess differences in aggression as a function of instructions designed to stress either "ideal behavior" or "actual behaviour" as well as differences in aggression as a function of status of the target. "Ideal" was defined as the socially acceptable response as compared to "actual" which was defined as the response which would occur regardless of social norms. He found significant main effects for his three hypotheses, the results suggesting that aggressive responses

to frustration were more likely to occur when "ideal" standards were not stressed, when frustration was arbitrary, and when it was instigated by a peer as compared to an authority figure.

Allison and Hunt (1959) attempted to assess the relationship of social desirability as a factor which may suppress aggression under certain circumstances. A paper and pencil Situational Frustration Test and the Edward's Social Desirability (SD) Scales were then administered and subjected to correlational analysis and ANOVA. A significant difference was found in reference to the differing conditions of frustration, again providing support for Pastore's hypothesis. The high SD group evidenced significantly less aggression than the low SD group. The effect of SD, however, tended to be attenuated when the frustration was unjustified or arbitrary - high SD subjects evidencing more aggression in these situations than in situations where the frustration situation was less arbitrary.

The importance of Pastore's assertion is readily apparent. Man's cognitive processes have an important mediating influence on his aggressive behaviours. In particular, the individual's perceptions about the causes of his frustration are crucial to predicting how he will react. Since attribution theory focuses on man's perceptions of causality it can further our understanding of aggressive phenomena. Therefore, a brief overview of attribution theory and research will be presented.

Heider's Theory of Attribution

Heider's (1958) theory of attribution represents an attempt to

systematize and elaborate upon observations of "naive causal inference." It attempts to explicate the bases upon which individuals determine and assign causality for either their own or some other person's behaviour. Further, the theory attempts to specify and predict which "attribution" or causal assignments will be made in any particular situation, and what the implications of a particular attribution may be for subsequent behaviour.

Heider describes his approach as "common-sense" or "naive-psychology" because his foci are the processes of attribution which are used by ordinary individuals, even though these processes may not be adequately formulated or acknowledged by the "common man."

Heider describes how as stimulus situations, such as an event or the behaviour of another, impose upon a subject, he attempts to give meaning to this perception of outside reality. He forms beliefs about the events or the other person. He attempts to interpret the other's actions and make predictions as to what others might do under certain circumstances. He attempts to find the reasons which can account for the behaviour (causal attribution) such as whether the causes were impersonal or personal, and with the latter, the intent involved. It is only after the person provides meaning to the stimulus situation that he can and does react in a manner which he perceives is correspondent or appropriate.

An important principle of "common-sense psychology" which has been alluded to is that man needs to make his world meaningful if he is to predict and control it. However, the transient and variable behaviour and events within the environment are such that the person

experiences a manifold of incoming messages. To make these messages meaningful they are encoded in terms of dispositional properties of the world around him. These dispositional properties include percepts of personal behaviour such as intention, ability, sentiment, personality traits, plus properties of the object such as size or color. Dispositional properties, then, are those properties that dispose objects and events to manifest themselves in certain ways in certain circumstances.

Man is usually not content simply to register the observables that surround him; he needs to refer them as far as possible to the invariances of his environment. Second, the underlying causes of events, especially the motives of other persons, are the invariances of the environment that are relevant to him; they give meaning to what he experiences and it is these meanings that are recorded in his life space, and are precipitated as the reality of the environment to which he then reacts. (Heider, 1958, p. 81)

It is important to note, at this point, that causal assignment may be misattributed to a particular disposition, and that the events and behaviours are not necessarily and cannot always be attributed to only one dispositional factor. For example, being charitable could be attributed to the motive of friendship when in fact the motive was a desire to control - misattribution; or helping behaviour could reflect both a disposition of friendliness and a desire to win approval.

Having outlined some of the factors which seem to be related to person's organization of his world, it is now possible to present a more comprehensive picture of the attributional picture. Assuming that individuals perceive events as being caused, attribution can be

made to factors within a person and to factors within the environment. To elaborate on this distinction, Heider's discussion on the dispositional qualities of "can" will be presented. The use of this particular disposition is deemed important because much of the research on attribution is based on the theoretical principles presented by Heider in relation to his discussion of "can."

"Can" generally is a dispositional concept which "refers to a relatively stable relationship between the person and the environment." It is a relationship between the ability of a person (internal factor) and the strength of the environmental forces such as task difficulty (external factor).

$$\text{can} = f(\text{ability} - \text{difficulty of environmental factor})$$

However, the proposition "p can cause x" does not mean "p causes x." Another factor, an unstable motivational factor must also be considered, this being what the person is trying to do (his intention) and how hard he is trying to do it (effort).

Neither "ability" nor "trying" are sufficient factors to cause behaviour but in combination, "p can cause x" and "p tries to cause x" does lead to "p causes x." Thus "if a task is easy, then even a person with little ability can do it; if it is difficult, the person cannot do it unless he has great ability. Or, we may say, if a person succeeds, then his ability must be greater than the environmental difficulty; if he fails (and has maximally exerted himself), his ability must be less than the environmental difficulty" (Heider, p. 87).

However, in everyday life, we want to know not only what the

sufficient conditions are for an effect to occur, but also whether what occurs is primarily due to internal or to external factors. This distinction is vital for a meaningful attribution of responsibility.

Thus, when "p can do x because x is easy to do," or "p can do x because p has great ability," the personal forces or internal factors are believed to be permanently greater than the environmental forces. On this basis, if only one person fails or one succeeds out of a great number of persons attempting a task, the outcome is attributed to internal factors. Alternately, if almost everyone succeeds or fails, the outcome is attributed to the task.

Throughout the theory as it has been presented, the emphasis has been upon the individual's attempt to make his world meaningful through the use of stable dispositional factors to organize the invariances within each person's world.

However, a relevant factor in the causal analysis of behaviour is the variable environmental factor designated as "luck." It is necessary for the person who is making attributions to consider this temporary condition such that he will not distort the causal analysis between the more permanent aspects of his world. In an attribution to luck, the implication is that environmental or external factors are primarily responsible for the outcome, and secondly, that these factors are the product of chance. The conditions which lead to an attribution of luck are either consistency or variability in performance. For example, if a person succeeds only once in a great

number of trials, luck is considered to be the causal factor. Alternately, if he fails only once and succeeds at other times, the failure is attributed to bad luck.

It is now possible to review the process of attribution. "X fails at a task." The questions which are asked: "Was the failure caused by internal factors or by the environment?" or "Was it due to some stable disposition or variable factor or perhaps both?" Rephrasing these questions within the language of the common man: "Was the failure due to something about that person - was he not trying or is he stupid?", or "Perhaps he failed because of a lack of luck or the task was simply too difficult." Having raised these questions, the person may attempt to resolve them either through available information on how others performed at the task, and/or how he feels he would have performed, or he may reach a conclusion with minimal or no information. It is only after attributing causality that it is possible to posit responsibility to the person or to the environment or to some combination of the two.

Within this frame of reference, Heider developed what can be called stages or levels of perceived responsibility. First, a person can be held responsible for each and every effect that is in any sense related to him. At a second level, a person can be held responsible for anything that is caused by him - i.e., that he was a necessary condition for the action although he could not have foreseen the outcome. (This level is similar to what Piaget [1952] refers to as "objective responsibility" because only the behaviour, not the motivation is considered.) Thirdly, the person is held

responsible for any consequence that he might have foreseen even though it was not related to his own goal and was not a part of his causal frame of reference. For example, "p" is held responsible for harming "o" although this was not his intent - he "should" have been deterred from pursuing his goal by the possibility of harm to "o". A fourth stage is perception of responsibility only when the source of the behaviour is attributed to being internal - when the outcome is the intended outcome. (Analagous to Piaget's "subjective responsibility.") Finally, there is a stage where even the person's own motives are not entirely ascribed to him but are seen as having their source in the environment. Because the environment is seen as being coercive, the motive is only partially internal and responsibility for an action is distributed.

A final conceptual distinction to be considered in Heider's theory is based on Angyal's concepts of heteronomy and autonomy. "Autonomy" refers to being "self-governed" whereas "heteronomy" refers to being governed from the outside. Heteronomous forces include both other persons and inanimate objects within the environment. Up until this point, external attributions have been considered primarily from an impersonal perspective. This explicit recognition of other people as an external cause of behaviour is often especially meaningful in analyzing interpersonal relationships.

Heider elaborated upon the heteronomous - autonomous distinction in relation to what he describes as differences in enduring perceptual attitudes which may affect attributions in any specific situation. Thus some persons tend "on the whole" to attribute the

causes of events to themselves, or alternately, to outside sources. Heider relates this distinction to Rosenzweig's concept of intro-punitive and extrapunitive reactions. The intro-punitive person is inclined to blame himself for unfortunate events - i.e., he sees himself as the cause, whereas the extrapunitive is inclined to react by blaming someone else or environmental circumstances.

Review of the Literature Related to Attribution Theory

Although Heider's major theoretical presentation of attributional theory appeared in 1958, it is only within the last several years, as evidenced by the plethora of studies in the area, that attribution theory has become a major area of interest. The research on attribution theory can be roughly classified according to several broad areas of concern: first, the research oriented toward the study of factors motivating individuals to obtain causally relevant information; secondly, research directed at establishing the factors that determine people's attributions; and thirdly, research related to the effects of attributions upon subsequent behaviour. Although the latter area is of primary importance for this present study, the second focus has been the most thoroughly investigated area and does contribute to an understanding of the attribution theory approach. As such, an overview of both the second and third areas of research will be presented.

Determinants of Attribution

Research on the determinants of attributions evidences the

broad range of factors which the "common man" includes in his "naive causal analysis." For example, Thibault and Riecken (1955) found that the behaviour of high status actors was attributed to internal factors. Jones, Rock, Shaver, Goethals, and Ward (1968) found that attributions were to ability when subjects performed well on early trials of a task. Feather (1961), Weiner (1970), Weiner and Kukla (1970) found that if outcomes were consistent with social norms, task attributions were made whereas performance at variance with performance norms gave rise to internal attributions. Benion (1961) found that unstable or erratic outcomes tended to be attributed to luck.

A finding which has received extensive support in the research literature (Johnson, Feigenbaum, & Weiby, 1964; Fitch, 1970; Frieze & Weiner, 1971; Luginbuhl, Crowe, & Kahan, in press) is the tendency for attributional judgements to reflect the positivity or negativity of an event. That is, consistent with Heiderian theory, persons attributed failure externally and success internally.

The effect of subject's expectancies as a determinant of either internal or external attributions, while having received extensive research, remains unresolved. Research spearheaded by Feather (Feather, 1965, 66, 67, 68, 69; Feather & Saville, 1967; Feather & Simon, 1971) has shown that unexpected success or failure is attributed more externally than is expected success or failure. The opposite results were found in research by Frieze and Weiner, 1971, and Luginbuhl, 1972.

The Problem of How Attributions Influence Behavior

Daryl Bem (1972) stated: "self-perception theory (read 'attribution theory') can get us from the stimulus manipulation to the attribution. It cannot get us from the attribution to anything beyond that" (p. 47). Bem is correct in his assertion in the sense that attribution theorists have dealt primarily with the processes whereby attributions are derived from informational input, and have, to date, not developed an adequate explication of how attributions influence subsequent behaviour.

Kelley (1973), in his discussion of Bem's criticism of the current limitations of attribution theory, suggested that the "link (between attributions and subsequent behaviour) seems to be characterized by reasonableness and plausibility. The person ordinarily takes action appropriate to the meaning his causal interpretation gives to his own or other's behavior.... The causal attribution identifies the causes of certain effects and forms the basis for decisions about how to act in order to bring about the continuance or discontinuance of these effects" (p. 126).

From Kelley's response, it is evident that he appreciates that Bem is not suggesting that attributions are unrelated to subsequent behaviour. It is rather the intervening processes which require further elaboration, and Kelley's comments are addressed to this issue. Bem himself admits that "if one managed to alter an individual's attitude or self-attribution, it is not unreasonable to expect that this will induce consequent changes in other response systems" (p. 45).

Although somewhat of a theoretical vacuum remains in respect to the processes of how attributions affect subsequent behaviour, several studies, which will now be reviewed, have demonstrated that differential attributions do affect behaviour.

Consequences of Differential Attributions

Several investigators (Phares, 1957; James & Rotter, 1958; Rotter, Leverant, & Crowne, 1961; Holden & Rotter, 1962) have studied the effects of both reinforcement schedules during acquisition and differential attributions of causality on task performance to either skill (internal) or luck (external) factors upon trials to extinction. The results indicate much greater variability in number of extinction trials for the luck condition. In the ability attribution, persons under 100% reinforcements extinguish at a significantly slower speed than subjects under 50% reinforcement. This result is consistent with the assumption that changing a self-perception from high to low ability should take longer than from medium ability to low ability. (The luck manipulation, as Weiner, Frieze, Kukla, Kesh, & Rosenbaum, 1971, suggested, does injustice to the logic of "common man." How could he accept that 100% reinforcement changing to 0% reinforcement during extinction can be related to luck alone?)

The significance of the above studies is that attributions do affect expectancies for future reinforcement, and as McArthur (1972, p. 173) states: "it is certainly reasonable to assume that expectancies for future behaviour would similarly vary with the cause to which prior behaviour is attributed."

Weiner and Kukla (1970) assessed how school children would reward or punish other students through a method of distribution of "punishing" or "rewarding stars" with the independent variable being amounts of ability and amounts of effort exerted on a task. It was found that children were punished and rewarded more for either limited or maximal effort output than they were for differential ability. Although both of the factors of interest are internal factors, ability is a stable dispositional attribute whereas effort is variable. Again the importance of attribution in explaining and predicting subsequent behaviour is evident.

Schachter and Singer (1962) initiated a line of research investigating the labelling of experienced emotions. They were able to show that drug-induced autonomic arousal can be experienced as either joy or anger depending upon situational factors when subjects were unaware of the drugs' arousing effects. Subjects who were aware of the arousing capacity of drugs evidenced no affective reaction to the situational factors. Nisbet and Valins (1971) interpreted these results within an attributional perspective as evidencing that the subject's assignment of causality will effect the direction and intensity of the experienced emotions.

Strickland (1958), in a study which deals with determinants and consequences of attribution simultaneously, found that if a supervisor attributes worker production to his surveillance, he will continue to monitor the worker's performance. In this situation, surveillance is both a determinant and a consequence of causal attribution. Valins (1966) in another experiment which dealt with

both determinants and consequences of attribution found that subjects rated the attractiveness of pictures of semi-nude females differentially when he provided the subjects with varying bogus heart-rate feedback. These results were interpreted to suggest that subjects sought a cause for heart-rate changes. In most cases the reason was related or attributed to the specific picture. Having made the attribution, the subjects "persuaded themselves" that the pictures were more attractive.

In a study by Storms and Nisbet (1970), it was shown that insomnia was reduced when the insomniac reattributed the cause of his sleeplessness to external causes, namely, a drug which was injected.

More directly related to the focus of this presentation are several studies on the effect of differential attribution upon altruistic behaviour. Thibault and Riecken's study (1955) found that high status benefactors were better liked. This can be interpreted as a result of differential attributions of causality. When a high status person is generous, his behaviour is attributed more to internal causes and he is well liked. When a same status person is generous his behaviour is attributed more to external causes and he is less well liked.

Goranson and Berkowitz (1966) showed the effects of attribution clearly through the following technique. A fellow subject (confederate) helped a subject to complete a dull task. This help was provided either voluntarily or because of a request by the experimenter. As there were no external sufficient reasons for the

voluntary help, internal attribution was assumed. Next when the subject had an opportunity to reciprocate, the subject helped out the volunteer to a greater degree.

Rotter's Internal Versus External Locus of Control

So far, the discussion has focussed on Heider's schema for causal attributions. Two points should be noted. First, the importance he assigns to the distinction between internal and external causes of behaviour. And, second, his concern with how causes are assigned in specific situations. He did, however, suggest that people may develop generalized tendencies to attribute events in various situations in a similar manner. In other words, some individuals have a propensity toward internal attributions, while others have a propensity toward external attributions. These propensities seem akin to what Rotter calls internal versus external locus of control.

Social learning theory (Rotter, 1954, 1955, 1960) provides the theoretical basis for the development of Rotter's concept. This theory suggests that a reinforcement acts to strengthen an expectancy that a particular event will be followed by reinforcement in the future. As such, when individuals perceive that a reinforcer follows from, or is contingent upon his own behaviour or attributes, he perceives a causal relation between his behaviour and the reward. Provided he perceives this causal relationship to continue to be operative, over time he develops a generalized expectancy that the rewards he obtains are under his control. He develops an internal

locus of control. Conversely, if he does not perceive a relation between his behaviour and his rewards, over time he develops a generalized expectancy that his rewards are controlled by factors external to himself such as luck, chance, or other persons. He develops an external locus of control.

Such generalized expectancies develop through a reinforcement history. As a result of many specific situations, persons come to perceive their behaviour as causally related or not related to the outcomes of their behaviour. Once these general tendencies are developed, it is suggested that they combine with specific expectancies in a situation to determine choice behaviour.

Several tests to measure persons' generalized expectancies have been developed. The best known is Rotter's I.E. or Locus of Control Scale.

CHAPTER III

THE THESIS PROBLEM

Within the general framework already discussed in Chapter II, the present thesis examines the tendencies of wrongdoers to aggress against their punishers. The general orientation suggests that retaliatory aggression will be a function of attributions about both why the wrongdoer failed and why the disciplinarian assigned punishment. These attributions should be influenced by the person's personality, especially his internal or external locus of control. These problems will be more fully addressed in this chapter so that specific hypotheses can be advanced.

Attributions Regarding Task Failure and Subsequent Aggression

Hypothesis One: When persons attribute their misdeeds to internal (rather than external) causes, they will be less apt to subsequently aggress against their punisher. The following arguments can be advanced to support this prediction. When a wrongdoer sees himself as responsible for this misdeed, he undoubtedly sees his punishment as more reasonable. A number of studies have found that the magnitude of aggressive behaviour which is determined by frustration appears to increase when no sufficient justification for the frustration (no appropriate external factors in the

situation to attribute causality) was apparent. Pastore's (1950, 1952) work has already been cited. It was found (Jones & Davis, 1965) that subjects were less likely to react negatively toward a person who rejected them when they felt that their own behaviour (internal attribution) might merit rejection than when the rejection seemed inappropriate. Epstein and Taylor (1967) found that counter-aggression was less after severe attack when the victim felt that the aggression was merited than when no aggression occurred but the victim was aware of the aggressor's intent to be unreasonably aggressive.

These studies seem to suggest that the meaning of punishment, like the meaning of frustration or even aggressive behaviour, depends upon the perceived relevance of the total situation. As such, if punishment followed failure at a task where the failure is attributed to internal factors, then the punishment may be perceived as justice - the punishment may be seen as having been deserved, or at least, perhaps not totally inappropriate because the person perceived himself as responsible. The punishment is related in a comprehensible manner to the stimulus situation or the total perceptual field.

However, if the failure is attributable to factors external to the person, then harm or punishment cannot be perceived as justifiable - the person phenomenologically not having failed since he does not accept responsibility, and as such the punishment may be perceived as an unreasonable attack, as aggression. "Counter-aggression" would seem predictable as a possible response.

Attributions Concerning the Punishing Agent's Behaviour and Subsequent Aggression

Hypothesis Two: When persons attribute a punishing agent's behaviour to external (rather than internal) causes, they will be less apt to subsequently aggress against the punisher. This prediction evolved out of a synthesis and logical extension of both attribution theory and the research related to arbitrary - non-arbitrary frustration (See Pastore, 1950, 1952; Cohen, 1955).

Basic to the argument relative to Hypothesis One is that subjects who attribute their behaviour (misdeeds) to internal factors will feel more responsible for their outcomes. Similarly, if a punisher's behaviour is attributed to factors internal to himself, he will be seen to be responsible. Conversely, when a punisher is following orders, attribution of causality is external and he should not be seen to be responsible - he being no more than a vehicle without any intent to punish or harm.

Pastore, in his discussion of arbitrary - non-arbitrary frustration, cites the example of a bus driver who drives past a person waiting for a bus. If the bus is empty, the person attributes causality for the driver's behaviour to internal dispositional factors - hostility, carelessness, etc., the consequence being feelings of anger or possible aggression. If the bus is full, the driver's behaviour is attributed to external factors - he cannot accept more passengers than bus regulations allow, etc. An aggressive response is unlikely. The cited example is analagous to a punisher who is seen either to be personally responsible, or is

seen to be merely following orders within limited freedom to alter his behaviour.

Consistent with attribution theory, it is therefore proposed that if subjects perceive a punisher to be following orders - attributing the punishment to factors external to the punishing agent, they will not see him to be responsible for his behaviour and therefore will react less aggressively toward him as compared to a punishing agent whose behaviour is attributed to internal factors - who they perceive to be personally responsible.

Locus of Control and Attributions for Task Failure

Hypothesis Three: When internals (compared with externals) as measured on Rotter's locus of control scale experience failure, they will be more prone to attribute their failure to internal causes. The nexus between Heider's analysis of causal attributions in specific situations and Rotter's I.E. dimension has already been broached in Chapter II. When persons tend as a whole to see the world as "self-governed" - autonomous attribution or internal locus of control, or as "governed from the outside" - heteronomous attribution or external locus of control, their overriding "perceptual style" or "phenomenal frame of reference" may tend to attenuate or exacerbate attributions in specific situations. Thus a person who sees his life as generally controlled by factors outside himself such as by luck or powerful other may tend to attribute a task outcome to external factors even though within the specific context an internal attribution would seem to be most appropriate - i.e.,

information obtained by the person from the environment suggests that he is in fact responsible, that he is causing the outcome because of factors internal to himself. In such a situation, the specific attribution might be attenuated - i.e., person feeling less responsible for the outcome of his behaviour. Conversely, a person whose general orientation or "perceptual style" is towards autonomous attributions might assume some responsibility for an outcome which in the specific context appears to be externally caused - external attribution.

Only two studies, both of which are currently in press, address themselves to the possible relationships between locus of control (using Rotter's I.E. Scale) and attribution.

Sosis (in press) found that internals on Rotter's I.E. Scale assigned significantly more responsibility to a defendant in an automobile accident scenario than did externals. Furthermore, because the internals attributed the outcome to the defendant, they judged the defendant more harshly in terms of punishment than did externals.

Luginbuhl et al. (in press) found no relationship between locus of control and subjects' attributions to either internal or external factors on a performance task. However, they offered no explanation for the obtained results. While no direct relationship was found between subjects' attributions and locus of control, they did find evidence that the stability - instability dimension within both the internal and external dimensions tended to confound the results relative to internal - external attributions. The author of this thesis raises the possibility that the subjects' locus of

control may be a mediating variable which affects subjects' tendency to attribute causality to either the stable or unstable factors within the internal and external dimensions. For example, internals might tend to attribute their outcome more to effort (unstable factor) whereas externals might tend to attribute causality to ability (stable factor) because externals might tend to perceive ability as a factor over which they have no control. As both ability and effort are internal factors, no effect of locus of control would be evident in terms of external and internal attribution.

It is difficult to move beyond the proposed explanation other than to raise the possibility that the situational determinants were preponderant to the extent that the effects of subjects' generalized expectancies were so attenuated that their effect was not statistically evident. If so, the outcome of this research taken in conjunction with the Sosis study would suggest that Rotter's locus of control may affect subjects' causal attributions in many experimental settings.

Locus of Control and Aggressive Behaviour

If internals attribute failure to internal causes (Hypothesis Three) and attributing failure to internal causes reduces subsequent aggressive behaviour (Hypothesis Two), then Hypothesis Four follows.

Hypothesis Four: As measured on Rotter's locus of control dimension, internals (compared with externals) will be less aggressive toward their punishing agent. The I.E. literature is worth reviewing with regard to this hypothesis. Among over 850 studies

of immediate relevance to the locus of control construct (cited in reviews of the research by Rotter, 1966; Lefcourt, 1966, 1972; Joe, 1971, and in bibliographies prepared by Throop & MacDonald, 1971; MacDonald, 1972a, 1972b, 1973) only three studies which explored the relationship of locus of control and aggressiveness were found.

The obtained results of two of the studies, Brisset and Nowicki (1973) and Vantress and Williams (1969), are consistent with Hypothesis Four. The third study, Davis and Mettee (1971), found internals tended to be more aggressive than externals when aggressing against "others" after having obtained performance feedback on a task they were performing.

The Brisset and Nowicki and the Davis and Mettee study have particular relevance to the current study because both used designs which are quite similar to each other and in many respects paralleled the design employed in the present thesis.

In both studies, subjects were required to participate in an ambiguous task and bogus feedback was provided.

The Brisset and Nowicki study provided failure feedback to all subjects - suggesting that the subject had performed poorly relative to the performance norm. The manipulation was to effect a failure reaction, and the prediction was that internals should respond in a more constructive manner to frustration because of their beliefs as to their personal competencies. Externals, it was argued, saw frustrating experiences such as the task as insurmountable and would therefore evidence greater frustration. Using the

Child - Waterhouse Frustration Inventory, it was found that externals were significantly more aggressive. Furthermore, externals evidenced significantly more negative outcomes in the responses to the Thematic Apperception Test.

The Davis and Mettee study used a 2 x 2 x 3 design (internal - external - locus of control / no feedback - positive feedback - negative feedback / self - other target of aggression). Their findings relevant to the current study are that externals aggressing against the "other" target were the most aggressive group in the no feedback condition and were apparently the least aggressive group in the negative feedback condition. (As the study provides no means relative to the specific groups' aggressiveness, it is difficult to ascertain the exact outcomes which are relevant to the present study.)

The theoretical rationale that Davis and Mettee proposed in presenting their hypotheses, all of which were confirmed, is that externals should be more willing than internals to aggress against others. If no information about task performance is present, these tendencies should be manifest. However, where information about task performance is present, these tendencies should be reversed because the information serves as a cue which defines a situation as one calling for the imposition of aggressive constraints. These aggressive restraints are supposedly developed through socialization pressures which are brought to bear in the person's learning history as he follows his general propensity to aggress against his "appropriate" target - i.e., internals against "self," externals against "others."

It is the author's suspicion that the Davis and Mettee explanation of the effects of outcome information upon aggressiveness developed out of post hoc analysis of their particular results - the Davis and Mettee study required subjects to indicate their expectancies as to how well they would perform following four "practice trials" at the task but no mention was made of findings obtained relative to subjects' ratings. Furthermore, outcomes in relation to the "other" had no rational connection to the subject task behaviour, and the occasion of the aggression was an interruption by the experimenter during the task at which time he asked the subjects to choose some level of aggression for either himself or the "other."

In summary, the explanations proffered by Davis and Mettee appear somewhat inconsistent with the general locus of control theory and the other cited research, the explanations perhaps having been developed following results which arose out of a problematic experimental design.

Thesis Predictions - Summary

The following were the proposed hypotheses:

1. When persons attribute their misdeeds to internal (rather than external) causes, they will be less apt to subsequently aggress against their punisher.
2. When persons attribute a punishing agent's behaviour to external (rather than internal) causes, they will be less apt to subsequently aggress against the punisher.
3. When internals (compared with externals) as measured on Rotter's

locus of control scale experience failure, they will be more prone to attribute their failure to internal causes.

4. As measured on Rotter's locus of control dimension, internals (compared with externals) will be less aggressive toward their punishing agent.

CHAPTER IV

METHOD

Overview

A final sample of 80 introductory psychology students were used as subjects in this survey. Rotter's I.E. Scale was administered to each participant. Upon arriving in the laboratory, subjects were asked to solve seven anagrams. Half the subjects were led to believe their performance on the anagram task would be primarily due to internal factors (i.e., their own effort and ability). The other half of the subjects were led to believe their performance on the anagram task would be primarily due to external factors (i.e., luck and the difficulty of the task). Since it was impossible to solve most of the anagrams, the subjects inevitably failed. They were punished by a confederate who posed as another subject. In one condition the confederate was personally responsible for the punishment he administered; in a second condition the confederate was merely carrying out the experimenter's orders so he was not responsible for the punishment he administered. The subject and confederate went onto a second paired associate learning task with the subject serving in the role of the teacher. In this situation, the subject could administer aversive noise to the confederate. The frequency and intensity of the subject's blasts were used as a measure of retaliatory aggression. Supplementary data were collected

at various points in the experiment and all subjects were debriefed.

A $2 \times 2 \times 2$ factorial design was used with ten subjects in each cell. The three variables of interest were external versus internal attribution for failure at a task (ability-effort and luck-task difficulty instructions), responsible versus non-responsible punisher, and internal versus external locus of control. All three variables were of a between subjects, fixed effect nature.

Subjects

The initial sample of subjects for the experiment was 97 male students participating in experiments within the Department of Psychology at the University of Manitoba as part of the requirements for the Introductory Psychology course. Of the 97 subjects, 16 were eliminated from the subject sample on the basis of post-experimental debriefing, and one subject left because he did not wish to participate in a study which involved punishment. Fourteen of the 16 subjects were rejected on the basis of their expressed suspicion as to the nature of the study, one was rejected because of hearing difficulties and one was rejected because he failed to cooperate with the experimental instructions. All the subjects were run during the second term of a year long course. Perhaps the students' experiences during their Psychology course help explain why 16 subjects expressed suspicion. Many students had seen a film of Milgram's obedience experiment; others had previously participated in research involving deception, and the like.

Of the 16 subjects, 2 were externals (I.E.) in the Luck-task

difficulty responsible punisher condition, 4 were internals in the same condition; 1 was an external in the Luck-task difficulty non-responsible punisher condition, 2 were internals in the same condition; 3 were externals in the Ability-effort responsible punisher condition, 2 were internals in the same condition; 2 were externals in the Ability-effort non-responsible condition, no internals in the Ability-effort non-responsible punisher condition were rejected.

Apparatus and Laboratory Setting

The laboratory was set up such that the subject and the subject-confederate sat at opposing ends of a large table. A divider with a narrow slot at its base separated the two subjects making it impossible for them to see each other. The audio equipment was set up at one end of the table. It was set up such that the taped instructions, the instructions through the microphone, and the blasts of white noise could be presented through headphones with a minimum of switching. The headphones were mobile and could be moved from one end of the table to the other. The audio equipment also included dials for determining the number and intensity of the noise blasts to be administered.

The Noise Generator used had a maximum intensity of approximately 124 decibels. However, a survey of the results of studies on dangers of high intensity noise in various issues of the Journal of Acoustic Research and in Glass and Singer's (1972) Urban Stress led the present author to select an intensity below that used in much of the research on the effects of noise. The noise intensity

selected as the punishing stimulus was approximately 108 decibels. This level, compared to the noise stressors used in the research cited by Glass and Singer, is aversive but safe.

A schematic diagram of the equipment setup and of the laboratory layout are provided in Appendix A and B respectively. The equipment used in the experiment was a Grason-Stadler 901-B Noise Generator, a Hitachi Dolby Cassette Recorder with microphones, Superex Headphones, a 100-c Hunter Interval Timer, a Pedaline Foot Switch and a stopwatch.

Tests

The Rotter I.E. Personality Scale (Rotter, 1966) was administered to assess subjects tendency to see their worlds as being under their own control (internal) or under control of factors outside of themselves such as luck and powerful others (external). The I.E. Scale is presented in Appendix C.

The I.E. Scale has fairly consistently evidenced test-retest reliability coefficients for one to two month intervals in the range of .48 to .84 (Joe, 1971). Rotter (1966) reported good discriminant validity for his Scale as indicated by low correlations with such variables as intelligence, social desirability, and political affiliation. Joe (1971) cited more recent research which partially supported Rotter's (1966) findings in reference to the Scale's discriminant validity. It should be noted, however, that in the last several years Rotter's Scale has been frequently criticized - particularly in its seeming relationship to social desirability (Joe, 1971, and bibliographies prepared by MacDonald, 1972a, 1972b, 1973,

and Throop & MacDonald, 1971).

Performance Task

The subjects first laboratory task was the solution of 7 anagrams, 3 of which were to be solvable at not more than 50% level of difficulty and 4 of which were to be unsolvable. Initially ONERSP, ERROPP, and ONEASS were chosen as the solvable anagrams as these had been found to be solvable at the 50% level of difficulty for college students (Petzel & Gynther, 1970). However, pilot data suggested that these anagrams were too difficult and as such, the anagrams which the author developed were SLOOHC, WELYOL, and RFATHE. Pilot data suggested that these were solvable at approximately the 33% level of difficulty, a level deemed suitable for the experimental procedures. Three of the other four anagrams, ALSEGT, OPUSGN, and EMAGLE were taken from Feather's 1966 list of unsolvable anagrams and one POSLUP, was developed by the author, it also being unsolvable.

The anagrams were presented in the following order: OPUSGN, SLOOHC, POSLUP, WELYOL, RFATHE, EMAGLE, ALSEGT (See Appendix D for the Anagram Task which was used).

Testing Procedure

Volunteers for the experiment were requested from classes which had completed Rotter's I.E. Scale several months before the experiment as part of an independent research project. As several subjects had not completed the I.E. but had, nevertheless, volunteered, these subjects completed the I.E. Scale immediately upon entering the laboratory.

The separation of subjects into external or internal groups was based upon a median split - scores of 11 or above being external and 10 or less being internal.

Laboratory Procedure

An equal number of internal and external subjects were randomly assigned to one of the following treatment groups: (1) ability-effort (internal attribution for task failure) - responsible punisher group; (2) ability-effort - non-responsible punisher group; (3) luck-task difficulty (external attribution for task failure) - responsible punisher group; and (4) luck-task difficulty - non-responsible punisher group. On the basis of the random assignment, the experimenter placed the appropriate instructional tape on the tape-recorder - a differing tape having been prepared for each of the four treatment groups.

The experimenter then entered the subject waiting room and advised the experimental subject and the confederate-subject to enter the laboratory and to be seated on chairs provided on one side of the laboratory. The experimenter then read the following introduction to the experiment:

I wish to welcome you both to the experiment. I hope you find it interesting. The experiment is a combination of two smaller experiments dealing with learning tasks and with the possible effects of reward and punishment - not a strange area in psychology as you probably both know.

Because I am studying the effects of reward and punishment on your future performance at the same or a related task to the one in which you will first be participating, you will both be required to participate in a learning task as a subject on two occasions.

These two tasks may not follow each other directly since this allows the possibility of assessing whether closely spaced versus widely spaced times between tasks makes a difference.

I wish to inform you at this point that as the experiment may involve punishment for you, you may leave now if you so desire. You may also leave at any point during the experiment if you so desire and this will not prevent you from receiving your experimental credits.

I would appreciate that you be yourself and act in a way that you feel is natural. Once the experiment is completed, you can and undoubtedly will return to your conventional behaviour, but while in the experiment, I would appreciate that you act in a way that you wish. I want to further emphasize that what you do in the experiment will be held in strict confidence and in no way can affect your grade in your psychology course.

The rationale for these general instructions was first to allow the subject the option to leave the experiment if he did not wish to participate; secondly, they were meant to establish a cognitive set in the subjects where they considered the implications of reward and punishment on a "learning task," and thirdly, they were meant to free, to a degree at least, the subject from everyday inhibition to react aggressively (if he felt like acting that way) in an alien and structured setting such as the laboratory.

To always assign the subject as the problem-solver in the first task in an apparently random manner, the experimenter then flipped a coin which had a leaded edge. Thus the experimenter always knew which side was up. Before revealing the coin he could then suggest for example, that if it were heads the subject would participate as the learner in the first task and the subject-confederate would serve in the teacher role, and that these roles would be reversed for the next learning task.

The subject and the subject-confederate were then directed to opposite ends of the table. In front of the confederate was a set of headphones, the noise producer, and a microphone. The experimenter "explained" the operation of the equipment to the subject-confederate and then indicated that as the subject's prospective performance on the learning task might be such as to necessitate punishment, he should sample the punishment at differing levels such that he would know what type of punishment he might be presenting. The subjects could hear some sound as the confederate tested the noise generator. (During the pilot study, pilot subjects hesitated to "blast" the confederate-subject because they felt he had no knowledge of the intensity of the blasts which he presented to them.)

The subject was then instructed to put on the headphones and to pay close attention to the taped instructions which he would be hearing. The instructions explained the anagram task indicating that the subject would be rewarded or punished depending upon how he performed. These instructions served to manipulate the subjects' attributions of why they failed and to influence their perceptions of confederate's responsibility in administering punishment. Because the confederate did not hear the taped instructions, he was not aware whether subjects were in the "ability-effort" or the "luck-task difficulty" treatment groups.

Following the completion of the taped instructions, the confederate (through the microphone into the subject's headphones) told him he would now be giving him the Anagram Task, that he would have 20 seconds to complete each one and that he was not to turn to the

next anagram in the booklet until he advised him to "turn." The confederate then gave the subject the Anagram Task via the slot in the divider. The Task was then completed as per the instructions. Following the experimenter's verbal suggestion, the confederate requested the completed Anagram Task and corrected it. The confederate, after about 15 seconds, indicated the score which the subject had obtained. The confederate had been informed as to whether the treatment was a "responsible" or a "non-responsible punisher." In the "responsible punisher" treatment, the confederate advised the subject that he felt the subject had failed and should be punished. Similarly, in the "non-responsible punisher" treatment, the experimenter advised the subject that he had failed and would be punished (See Independent Variables for wording of instructions). The confederate then administered the punishment. The punishment itself was always six blasts of medium-high intensity (c. 108 dbls.) of .5 second duration.

The experimenter then indicated that this completed the first part of the experiment and that both subjects would be required to fill out two questionnaires. The subject was given Questionnaire A - All Anagram Subjects and Questionnaire B - Anagram Subjects Who Fail. These questionnaires were designed to assess the subjects feelings toward the confederate as well as to check on the success of the manipulations of the independent variables. (They are discussed in the section on Independent Manipulation Check and Dependent Measures and are provided in Appendix E and F respectively.)

The rationale for using the anagrams task was that it has been

used previously in the manner outlined (Petzel & Gynther, 1970) with apparent success. Further, research by Feather (1966, 1967, 1969) had shown that attributions as to outcomes seem to involve both internal and external factors - i.e., that solving anagrams is the type of task whose outcome can be readily attributed to internal or external attributions. Feather did not manipulate the actual attribution - his interest was rather which attribution was made as a function of differential expectancy to succeed or fail, as well as differential outcome - success or failure.

Studies by Holden and Rotter (1962), James and Rotter (1958), Ryckman, Stone, and Elam (1971), Phares (1957), Rotter, Liverant, and Crowne (1961), Weiner (1970) do suggest that differing tasks can be perceived as having their outcomes controlled by skill factors or luck factors. However, none of these studies used anagrams as the experimental task.

The experimenter then indicated that the next part of the experiment was a paired-associate learning task, and the purpose was to assess the effects of punishment on performance. The experimenter then suggested that as the subject-confederate had been the teacher on the first section of the experiment, he would now serve as the learner.

The subject and the subject-confederate changed places and the subject was shown a list of twelve pairs of words which would be given to the subject-confederate to memorize. The experimenter then gave the subject-confederate the list of paired words (See Appendix G) and was told that he would have three minutes to memorize the

words. He was further advised that should he make errors, he would be punished after an error was made, and following completion of the list, he could re-study the list for an additional 30 seconds and then the other subject would present the list again.

The experimenter then showed the subject how to increase the intensity of the noise generator, where to press to activate the noise blast, and how to switch the microphone on and off, etc.

The experimenter then indicated that the subject was to read the words on the left side of the list to the confederate-subject one at a time. If the confederate gave the correct associate, he was to go to the next word. If not, he was to punish the person at whatever intensity level and with however many blasts as he felt was appropriate with a maximum of 10. The subject was then asked to read the following instructions to the confederate through the microphone.

When I read you a word, you are to tell me the word which is associated with it. If you are correct, I will proceed to the next word. If you are incorrect, I will tell you the correct word and then present a punishment to you at some level of intensity between one and ten. I will give you between one and ten blasts at the level I choose. If you make errors you can study the list again, and then we will try the list again.

The experimenter meanwhile got the learning list from the subject-confederate (who had a duplicate with a prescribed list of errors and correct response) and gave it back to the subject.

The subject-confederate gave six correct responses to the task during the first presentation, and 10 correct responses during the second, thereby allowing for eight opportunities for the subject to punish the confederate. (The confederate manipulated a switch

on the headphones which markedly reduced the intensity of the noise blasts although at higher intensities they remained audible to the subject on the other end of the table.)

In the first experiment, the experimenter was sitting in such a way that he could see both the subject and the subject-confederate. Returning to this location, the experimenter could see the intensity settings on the noise generator chosen by the subjects. Intensity and number of blasts were recorded.

Following the completion of the paired-associate task, the experimenter suggested that at this juncture in the experiment he wished to speak with each of them individually to obtain their views as to what they felt about the study up to this point. As the confederate-subject was located closer to the laboratory door, it was suggested that he should step out while the experimenter spoke with the subject.

During the interview with the subject, the experimenter attempted to ascertain whether the subject was suspicious of the experimental manipulations and deceptions. The subjects were asked what they felt the purpose of the study was, whether they felt they had deserved the punishment they received, whether they felt that the other subject had presented a too intense punishment or whether he should have followed orders, whether they felt that they had received the worst deal in terms of punishment, whether they felt that the experiment may have had other goals besides studying learning behaviour, whether they had seen or heard of any studies which were similar to this experiment, whether they knew the "other

subject," etc.

If during this questioning the subject seemed to be suspicious, this was pursued. If in fact the subject indicated suspicion, he was eliminated from the subject sample.

The subjects were then debriefed in detail with the purpose of the experiment being fully explained to them. They were requested to refrain from discussing the experiment with any of their friends or classmates. They were further informed that if they were interested in the experimental outcome, they should leave their addresses with the experimenter and a letter outlining the results would be forwarded to them in several months time. This letter can be found in Appendix H.

Independent Variables

The tape-recorded instructions which were developed to affect subjects' attributions for task failure to either internal factors (ability-effort condition) or to external factors (luck-task difficulty) read as follows:

Ability-effort condition. In a minute you will be presented with an anagram task. An anagram is a series of scrambled letters which can be arranged correctly to make up a meaningful English word. No doubt all of you have attempted anagrams at one time or another. You know that some sets of letters can easily be formed into words very quickly. Some sets of letters seem almost impossible to form into words no matter how long you look at it. Because this difference between different sets of letters and between the way the letters are scrambled is important for understanding learning processes, it has been the subject of a lot of research by psychologists. Your involvement today is a continuation of this research; this experiment being involved in the studying of the effects of reward and punishment on a carefully selected group of anagrams which have already been used in previous research by Dr. N. Feather in 1966, 1967, and 1968, and by Drs. Tom Petzel and Malcolm Gynther in 1970.

Your success in dealing with the anagrams we present to you today will be largely a matter of skill or ability. Sometimes solving anagrams is partially a matter of luck and partially due to the difficulty of the particular anagrams. But in this experiment we have largely eliminated both of these factors. That your success will depend largely upon your ability is true because of the experimental conditions and the way in which we have selected and assigned the anagrams. First, the solution of some anagrams seems inherently more dependent on skill and persistence than on good fortune. Second, based on past research, we have been able to select the anagrams using procedures which eliminated any randomness which could lead to chance factors affecting the outcome. Furthermore, we realize that anagrams vary in their difficulty. Some anagrams are so easy that anyone with any degree of ability seems to find the solution. Others are so difficult that hardly anyone can solve them. We have eliminated all such very easy and extremely difficulty anagrams today. Instead we are presenting every subject in the experiment with known difficulty levels. Therefore, any differences in the way subjects perform will be due to their own ability and effort and will not be due to the chance factor of getting anagrams of different levels of difficulty. Thus, you should now understand that your success or failure on the anagrams has been carefully controlled so that it is almost completely a matter of the level of ability or skill which you possess. To find out the exact role which the ability or effort plays in the way we are running the experiment today we did an earlier pilot study along the same lines as this one. We have already analyzed our data using an analysis of variance technique. I know you may not understand completely what is meant by such a statistical procedure. In essence, an analysis enables a psychologist to estimate how much each of several independent variables contributes to the way people behave in an experiment. It was found that the outcomes on the anagrams which you will be given was slightly more than 80% due to skill or ability and only 20% due to luck or task difficulty. So I would hope that you work hard.

Luck-task difficulty condition. In a minute you will be presented with an anagram task. An anagram is a series of scrambled letters which can be arranged correctly to make up a meaningful English word. No doubt all of you have attempted anagrams at some time or another. You know that some sets of letters can easily be formed into words very quickly almost as if the word was looking at you. Some sets of letters seem almost impossible to form into a word no matter how long you look at it. Because this difference between different sets of letters and between the way the letters are scrambled is of importance for understanding learning processes, it has been the subject of a lot of research by psychologists. Your involvement today is a continuation of this research, this experiment being involved in the studying of the effects of reward and punishment on a carefully selected group of anagrams which have already been used in previous research by Dr. N. Feather in 1966, 1967, and 1968, and by Drs. Tom Petzel and Malcolm Gynther in 1970.

Your success in dealing with the anagrams we present to you today will be largely a matter of luck. Sometimes solving anagrams is partially a matter of skill but in this experiment we have largely eliminated the skill factor. That your success will depend largely on luck is true because of the experimental conditions and the way in which we have selected and assigned the anagrams. Based on past research we have been able to select two types of anagrams; first, the solution of some anagrams seems inherently more dependent on chance and good fortune than on ability. People are just able to solve such anagrams or they can't. For some reason forming these particular letters into a word is independent of the ability of the person trying to solve the anagram. Second, we have selected some anagrams which vary in their difficulty. Some of these anagrams are so easy that everyone finds the solution unless they are very unlucky. Furthermore, with some of these easy anagrams the letters are arranged so that you only need to change two or at the most three letters to arrive at a solution. Other anagrams are so difficult that no matter how much ability you have, you won't find a solution unless you are very, very lucky.

In deciding how many difficult and how many easy anagrams to assign to you we are using a table of random numbers so by chance alone some of you should be able to solve most of your anagrams and others of you will be able to solve only a few, if any, of your anagrams. Thus as you now understand, your success or failure on the anagrams is almost completely a matter of how lucky or unlucky you are.

To find out the role that luck plays in the way we are running this experiment today we did an earlier pilot study along the same lines as this one. We have already analyzed our data using an analysis of variance technique. I know that you may not completely understand what is meant by such a statistical procedure. In essence, an analysis of variance enables a psychologist to estimate how much of each of several independent variables contributes to the way people behave in an experiment. It was found that the outcome on the anagrams which will be given was slightly more than 80% due to luck and only 20% due to ability or effort. So I would wish you a lot of luck!

The following taped instructions were added to the ability-effort or luck-task difficulty instructions to effect an attribution of responsibility for punishment to the punishing agent.

Responsible punisher condition. As you were told previously, depending upon your performance you will be either rewarded or punished. The other subject has been asked to look at your score, compare it to a list of past scores on this task, and then personally decide if you succeeded or failed. He has also been told that he is personally to decide as to the amount of reward and punishment which

he feels you deserve. You will now be given the anagram task. You will have 20 seconds to work at each anagram. Start when you are instructed. Stop at the stop signal. Do not turn over a page until you are told to do so. After the last anagram is completed, please pass them through the slot in front of you. As the tape-recorded instructions are now completed, please knock on the divider in front of you so the other subject can turn off the tape. Thank you.

Similarly, the following instructions were added to the ability-effort or the luck-task instructions to effect an attribution of responsibility for punishment to factors outside of the punishing agent.

Non-responsible punisher condition. As you were told previously, depending upon your performance you will be either rewarded or punished. The score which you obtain will be compared to a normative sample, that is, to scores that other persons have obtained in the past and then the experimenter will instruct the other subject as to the rewards or punishments he must provide. You will now be given the anagram task. You will have 20 seconds to work at each anagram. Start when you are instructed. Stop at the stop signal. Do not turn over a page until you are told to do so. After the last anagram is completed, please pass them through the slot in front of you. As the tape-recorded instructions are now completed, please knock on the divider in front of you so the other subject can turn off the tape. Thank you.

Prior to presenting the punishment, in the Responsible Punisher condition, the confederate made the following statement to the subject through the microphone:

I corrected the anagrams and I compared your score to some past scores which the experimenter provided me with. I think you failed. So I've been thinking and I've decided to blast you six times at Level # five.

Similarly, in the Non-responsible Punisher Condition, the experimenter made the following statement to the subject:

Okay (confederate's name) - You corrected the anagrams and on the basis of the score which (subject's name) got, he failed in comparison to our past scores so you have to now blast him six times at Level # five. You have no choice.

Dependent Measures

As behavioural measures of aggression were of primary interest in this research, the dependent variables which were used were the intensity of and frequency with which subjects punished the confederate.

Although the previous research literature on aggression typically used either an intensity measure or a frequency measure of some applied noxious stimulus, the particular design and apparatus used in this study facilitated the use of both these behavioural measures. The apparatus was set up such that the subject could set the intensity of the noise generator at any level from zero to nine, and could apply as many blasts of the sound as he wished (with an imposed limit of ten). De facto it was necessary for the subject to depress the Pedaline switch once to obtain an intensity score (from zero to nine) and frequency score of one.

Independent Manipulation Check and Derived Variables

Questionnaire A - All Anagram Subjects and the first scale on Questionnaire B - Anagram Subjects Who Fail were designed to assess the effectiveness of the experimental manipulations - i.e., the degree to which the treatment affected the subject's causal attributions, as a test of Hypothesis Three, and as an adjunctive means of interpreting the experimental results - i.e., using the subject's attributions as an independent variable.

Questionnaire A required that subjects indicate on four separate 11 point scales the relative import of luck, task difficulty,

effort, and ability in their obtained outcome. The scales were set up such that "Not at all due to" received a score of one and "Completely due to" received a score of 11. Because data obtained from the pilot project suggested that certain subjects tended to attribute the outcome "completely" to several causal factors - a logical impossibility, it was deemed necessary to impose an artificial restriction of between 11 and 14 sum total score for any one subject's attributions. As such, if a subject saw the outcome to be "completely" due to one factor, he had as a function of the imposed restriction no possibility of attributing the outcome to "about half" of another.

In order to assess the effects of subjects' overall attribution of responsibility for failure on the anagram task on subjects' reactive aggression, an overall attribution measure called EXT-INT was derived. The EXT-INT score was derived by combining the sum of the attributions to external factors (luck and task difficulty) minus the sum of the internal factors (ability and effort). A score of zero on this variable indicates equal amounts of internal and external attributions, a positive score indicates relatively more external attribution, while a negative score indicates relatively more internal attribution. (Although this measure was developed by the writer, it is essentially identical to and is given the same label as a variable used by Luginbuhl, Crowe, and Kahan, in press.)

CHAPTER V

RESULTS

The approach used in analyzing the data was to conduct a series of statistical tests. Although the dependent variable changed for each analysis, many of the statistical tests employed the same three independent variables in what will hereafter be called the basic $2 \times 2 \times 2$ analysis of variance (ANOVA) design. The two manipulated treatments (i.e., reason for failure and responsibility of the punisher), plus the I.E. factor were independent variables. First, Hypothesis Three and the effectiveness of the experimental manipulations were assessed using the basic $2 \times 2 \times 2$ factorial analysis of variance design. The subjects' causal attributions of responsibility for the task failure and the punishment received were each used as a dependent measure (Questionnaire A and B) in a separate ANOVA.

The basic $2 \times 2 \times 2$ analyses of variance using the frequency and intensity levels as separate dependent variables were conducted for the 80 subjects who comprised the final subject sample. These same two ANOVAs were also performed using the data for all 96 subjects which included the subjects who had been eliminated from the study (See Appendix I and J).

As no main effects on aggression were accounted for by I.E., the data were collapsed across Rotter's I.E. dimension and the data were re-analyzed using a 2×2 ANOVA. Planned comparisons were

conducted to assess the differences of the cell means.

Because the experimental manipulation which was to affect attribution of task failure to either internal or external factors proved to be somewhat weak, the data were re-analyzed using the subjects' EXT-INT scores which were sub-divided into three treatment levels: namely, strong-external, neutral, and internal attribution. The design used for the re-analysis was a 3×2 factorial analysis of variance. This design was used twice, once with each measure (frequency and intensity) of aggression as the dependent variable. Finally, the basic $2 \times 2 \times 2$ ANOVA was used to explore the subjects' success in solving the anagrams.

The program used for the factorial analyses of variance, Stats Program Number 12, was obtained from the University of Manitoba Statistical Package and was written by F. Chebib.

Hypothesis Three and the Effectiveness of the Independent Manipulations

On Questionnaire A the subjects rated the degree to which they attributed the anagram task outcome to luck, effort, ability, and task difficulty. Using these factors as well as several mathematical combinations (effort + ability = internal attribution; luck + task difficulty = external attribution; and external attribution - internal attribution = overall attribution or EXT-INT factor) as the dependent measures, Hypothesis Three plus the effectiveness of the manipulation intended to effect either an external or internal attribution (Luck-task difficulty/Ability-effort treatments) were assessed.

The results of the basic $2 \times 2 \times 2$ factorial analyses of variance using the cited factors as the dependent variables and I.E.

scores, the Luck-task difficulty/Ability-effort treatment, and the Responsible/Non-responsible Punisher treatment as the independent variables are presented in Table 1.

The attribution means for the four factors and the three derived variables as a function of independent variables are presented in Table 2.

As is evident, the manipulations of the causal attribution for the task outcome proved generally successful. In every case, with one exception, the means were in the predicted direction and in five of seven cases the F ratio representing this treatment effect was statistically significant. However, the manipulation was somewhat weak. In all conditions, there was a tendency for subjects to attribute their performance to external factors. The ability-effort group attributed 52.63% of the reasons for their outcome to external factors, and the luck-task difficulty group attributed 61.79% of the reasons for their outcome to external factors.

The data bearing on Hypothesis Three were clearly in the predicted direction, locus of control having affected subjects' perception of the Luck-task difficulty versus Ability-effort experimental manipulation. However, they did not reach conventional levels of statistical significance. As predicted, externals on Rotter's locus of control scale evidenced greater attribution to external factors whereas internals on the locus of control scale evidenced greater internal attribution. (Internal attribution scores: Internals [I.E.] \bar{x} = 6.35, Externals [I.E.] \bar{x} = 5.47, F = 3.20, p < .01; External attribution scores: Internals [I.E.] \bar{x} = 7.47, Externals

Table 1

Analysis of Variance of Subject's (N = 80) Attributions for Task Failure
as a Function of the Experimental Manipulations and Locus of Control

Source	df	Luck	DEPENDENT MEASURES					
			Task Diffi- culty	Ability	Effort	External Attri- bution	Internal Attri- bution	EXT- INT
Luck-task difficulty - Ability-effort (A)	1	5.93**	0.07	4.55*	1.55	7.47***	6.80**	5.50**
Responsible - Non-responsible Punisher (B)	1	0.09	2.28	0.18	1.17	1.31	1.15	0.58
Internal - External Locus of Control (C)	1	2.13	0.02	3.57	0.06	2.69	3.20	1.89
A x B	1	0.46	1.97	0.00	0.01	0.42	0.00	0.44
A x C	1	0.24	0.13	0.03	0.01	0.02	0.00	0.21
B x C	1	0.09	1.19	0.45	0.34	0.56	0.02	0.66
A x B x C	1	0.24	0.46	0.09	0.84	1.31	0.57	1.76
Within cells	72							
Total	79							

* $p < .05$

** $p < .025$

*** $p < .01$

Table 2

Attribution Means for the Four Factors and Three Derived Variables
as a Function of the Luck-Task Difficulty - Ability-Effort
Treatments and Locus of Control (N = 80)

Dependent Variables	Locus of Control	Luck-Task Difficulty Condition	Ability-Effort Condition
Luck	Internal	3.65	2.15
	External	4.15	3.15
Task Difficulty	Internal	4.55	4.60
	External	4.80	4.50
Ability	Internal	3.10	4.05
	External	2.40	3.20
Effort	Internal	2.60	2.95
	External	2.50	2.90
External Attribution	Internal	8.20	6.75
	External	8.95	7.65
Internal Attribution	Internal	5.70	7.00
	External	4.85	6.10
EXT-INT	Internal	2.50	-0.25
	External	3.40	1.55

Note. Attributions to the four factors of luck, task difficulty, ability, and effort are presented in terms of attributions to the factors on an 11-point scale with an imposed maximum of 14 points for the four factors in combination. Attributions to the derived variables are simply combinations of the first four factors.

[I.E.] $\bar{x} = 8.30$, $F = 2.69$, $p =$ approximately 0.1.)

On Questionnaire B the subjects rated the degree to which they attributed responsibility for the punishment received to either the other subject (confederate) or to the experimenter. Using these ratings as the dependent measure, the basic $2 \times 2 \times 2$ analysis was conducted to assess effectiveness of the Responsible/Non-responsible manipulation. The results (\bar{x} responsible = 7.90, \bar{x} non-responsible = 3.50, $F = 67.67$, $df = 1, 72$, $p < .001$) indicated that the manipulation was clearly effective. (A detailed ANOVA table is presented in Appendix K.)

The Independent Variables Effect on Aggressiveness

The basic $2 \times 2 \times 2$ factorial analyses of variance were conducted on both the intensity and frequency data to assess whether the treatments had effects on subjects' aggressive behaviour. A summary of the results of these analyses are presented in Tables 3 and 4. These data provided the primary test of the thesis' major hypotheses (One, Two, and Four).

The results indicate the following: (1) Significantly more aggression was directed against a "Responsible" as compared to a "Non-responsible" punisher using either measure of aggression. (2) External attributions (Luck-task difficulty condition) of responsibility for failure on the anagram task resulted in greater aggression than did internal attributions (Ability-effort condition). However, this trend proved to be significant only for the intensity measure. It was in the predicted direction but non-significant for the

Table 3

Analysis of Variance of the Intensity Measure of Subject's (N = 80)
Aggressiveness as a Function of the Experimental
Manipulations and Locus of Control

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Luck-task difficulty - Ability-effort (A)	1	472.88	5.73*
Responsible - Non-responsible Punisher (B)	1	430.13	5.22*
Internal - External Locus of Control (C)	1	4.28	0.05
A x B	1	0.90	0.01
A x C	1	3.40	0.04
B x C	1	27.03	0.33
A x B x C	1	106.95	1.30
Within cells	72	82.46	
Total	79		

* $p < .025$

Table 4

Analysis of Variance of the Frequency Measure of Subject's (N = 80)
Aggressiveness as a Function of the Experimental
Manipulations and Locus of Control

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Luck-task difficulty - Ability-effort (A)	1	62.02	1.16
Responsible - Non-responsible Punisher (B)	1	234.61	4.31*
Internal - External Locus of Control (C)	1	78.01	0.04
A x B	1	2.11	1.43
A x C	1	94.61	1.74
B x C	1	82.01	1.51
A x B x C	1	262.81	4.83*
Within cells	72	54.45	
Total	79		

* $p < .05$

frequency measure. (3) The hypothesis that Externals on Rotter's I.E. Scale would evidence more overall aggression than would internals was not supported although the data showed very weak trends in the predicted direction (\bar{x} for E's = 23.94, 13.50 and I's = 23.47, 13.17 for Intensity and Frequency respectively).

Based on the primary hypotheses, differing levels of anticipated aggression for eight treatment groups had been proposed. Table 5 outlines the relative levels of aggression predicted for each group.

However, as no major effects were accounted for as a function of Rotter's I.E. dimension, the data were collapsed across this variable. Naturally the predicted ordering of the remaining means would be essentially the same with the External Attribution/Responsible Punisher group being most aggressive and the Internal Attribution/Non-responsible Punisher group being least aggressive. Tables 6 and 7 provide the means for the aggressive behaviour based on the intensity and frequency measures respectively. Multiple comparisons of the means using Dunn's procedure are presented in Tables 8 and 9.

An examination of the means revealed that for the intensity measure, the pattern of aggression for the individual treatment groups followed the predicted pattern rather accurately, the Internal attribution/Non-responsible punisher group evidencing the least aggression and the External attribution/Responsible punisher group evidencing the most aggression with the other two treatment groups evidencing intermediate values.

Although the Internal attribution/Non-responsible group evidenced the least aggression using the frequency dependent variable,

Table 5

Relative Levels of Aggression Predicted for Each Group

	Internal Attribution for Task Failure		External Attribution for Task Failure	
	- - + Medium-low Aggressiveness	- + + Medium-high Aggressiveness	- + + Medium-high Aggressiveness	+ + + High Aggressiveness
Responsible Punisher				
Non-responsible Punisher	- - - Low Aggressiveness	- - + Medium-low Aggressiveness	- - + Medium-low Aggressiveness	- + + Medium-high Aggressiveness
	Internal Locus of Control	External Locus of Control	Internal Locus of Control	External Locus of Control

Table 6

Mean Level of Aggressiveness Using the Intensity Measure as a
Function of the Experimental Manipulations (N = 80)

	Internal Attribution for Task Failure (Ability-effort)	External Attribution for Task Failure (Luck-task difficulty)
Responsible Punisher	23.7	28.35
Non-responsible Punisher	18.85	23.83

Table 7

Mean Level of Aggressiveness Using the Frequency Measure as a
Function of the Experimental Manipulations (N = 80)

	Internal Attribution for Task Failure (Ability-effort)	External Attribution for Task Failure (Luck-task difficulty)
Responsible Punisher	15.15	14.95
Non-responsible Punisher	9.75	13.6

Table 8

Multiple Comparisons of the Intensity Means
Presented in Table 6 Using Dunn's Procedure

	X_1	X_2	X_3	X_4
$X_1 = 18.85$	-	4.85	5.0	9.5*
$X_2 = 23.7$		-	0.15	5.15
$X_3 = 23.83$			-	4.5
$X_4 = 28.35$				-

* $p < .01$ error per experiment

Table 9

Multiple Comparisons of the Frequency Means
Presented in Table 7 Using Dunn's Procedure

	X_1	X_2	X_3	X_4
$X_1 = 9.75$	-	3.95	5.20	5.40
$X_2 = 13.6$		-	1.35	1.55
$X_3 = 14.95$			-	0.20
$X_4 = 15.15$				-

the frequency measure deviated from the predicted pattern. Contrary to prediction, the External Attribution/Responsible punisher group was not aggressive most frequently. Instead, the Internal attribution/Responsibility group was marginally more aggressive than the External attribution/Responsibility group. It was predicted that the Internal attribution/Responsible group should evidence an intermediate frequency aggression similar to that of the External attribution/Non-responsible treatment group.

Re-analysis of Data Using Subject's Phenomenological Attributions

Because it was evident that the manipulation which was to effect an internal or external attribution for the anagram task failure had been only minimally successful (See Table 1), the data was regrouped using the subjects' own overall attribution of causality to either internal or external factors (EXT-INT score) as the independent variable. The data was regrouped using three levels of phenomenal attribution; namely, subjects whose EXT-INT score evidenced a clear external attribution composed one level, subjects whose EXT-INT score evidences a clear internal attribution composed another, and subjects whose EXT-INT score evidenced neither a strong external or internal attribution composed the third.

Three by two factorial analyses of variances on the intensity and frequency measures using the three way grouping of phenomenal attributions for failure and Responsible - Non-responsible Punisher as the second treatment were performed. A summary of the analyses are provided in Tables 10 and 11.

Table 10

Analysis of Variance of the Intensity of the Subject's (N = 80)
Aggressiveness as a Function of (a) the Subject's Phenomenological
Attributions for Task Failure as Measured by the Derived EXT-INT
Variable and (b) the Responsible - Non-responsible Punisher
Experimental Manipulation

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Levels of EXT-INT (A)	2	591.44	8.32**
Responsible - Non-responsible Punishers (B)	1	608.18	8.56*
A x B	2	15.28	0.21
Within cells	74	71.08	
Total	79		

* $p < .005$

** $p < .001$

Note. The EXT-INT score was derived by adding subject's attributions to ability and effort (Internal factors) and subtracting the obtained score from the sum of the attributions to luck and task difficulty (External factors). The subjects were divided into three groups - those with an EXT-INT score of 4 or more, those with a score of 0 to 3, and those with a score of less than 0. The intensity means for the three groups were 27.76 (4 or more), 21.90 (0 to 3), and 19.29 (less than 0).

Table 11

Analysis of Variance of the Frequency of the Subject's (N = 80)
 Aggressiveness as a Function of (a) the Subject's Phenomenological
 Attributions for Task Failure as Measured by the Derived EXT-INT
 Variable and (b) the Responsible - Non-responsible Punisher
 Experimental Manipulation

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Levels of EXT-INT (A)	2	116.74	2.06
Responsible - Non-responsible Punisher (B)	1	374.06	6.62*
A x B	2	21.15	0.37
Within cells	74	56.54	
Total	79		

* $p < .025$

Note. The frequency means for the three groups were 15.06 (EXT-INT 4 or more), 11.52 (EXT-INT 0 to 3), and 12.71 (EXT-INT less than 0).

As is apparent, the results based upon an analysis of the intensity dependent measure evidenced a definite increase in the effects of causal attribution for task failure upon subjects' aggressive reactivity, the proportion of variance accounted for increasing from less than six percent to almost thirteen percent. Although somewhat of an increase in the effect of the treatment based on the analysis of the frequency dependent measure was also found, the effect did not reach conventional levels of statistical significance.

The Effects of the Independent Variables on Anagram Performance

The basic $2 \times 2 \times 2$ ANOVA was used to explore the subject's performance on the anagram task. An apparent relationship of locus of control treatment score to subject's performance on the anagram task as a function of whether they received the luck-task difficulty or the ability-effort manipulation was found. Although the effect of the luck-task difficulty - ability-effort/I.E. interaction was found to be significant at only a $p < 0.1$ ($F = 3.61$, $df = 1, 72$), multiple comparisons of the means using Dunn's technique evidenced a difference between the externals who had received the ability-effort manipulation ($\bar{x} = 2.05$ out of a possible score of 3) and those who had received the luck-task difficulty manipulation ($\bar{x} = 1.2$) of $p < .01$ experimentwise ($I = 3.12$). The internals performance under both instructional sets were virtually identical (luck-task difficulty $\bar{x} = 1.70$, ability-effort $\bar{x} = 1.85$, $I = .613$). None of the other main or interaction effects in this analysis reached significance.

Summary of the Primary Findings

1. Hypothesis One was supported using the intensity measure. Re-analysis of the data using subjects' own causal attributions strengthened the support for Hypothesis One.
2. Hypothesis Two was supported using both dependent measures.
3. Hypothesis Three received marginal support.
4. Hypothesis Four was not supported.

CHAPTER VI

DISCUSSION

A review of the results evidences that Hypothesis Two was found to be unequivocally supported. As predicted, subjects reacted less aggressively toward a punishing agent whose behaviour was attributed to external (rather than internal) causes. The data bearing on the other three hypotheses were more equivocal. Therefore, this discussion will focus in order, on Hypothesis One, Three, and Four. Following discussion of Hypothesis One, problems with frequency as a dependent variable will be considered.

Hypothesis One

Hypothesis One, the hypothesis that subjects will react less aggressively against their punisher when they attribute their misdeeds to internal (rather than external) causes, was supported (somewhat weakly) based on the ANOVA's of the intensity dependent measure. While the results for the frequency measure were in the predicted direction, the results were not found to be significant. Post hoc analysis of both the experimental manipulation used and of the subjects' behaviour within the experiment revealed several difficulties in the design and conceptualization of the experiment which may partially explain the results related to Hypothesis One.

Whereas an examination of the effectiveness of the experimental

manipulation related to Hypothesis Two evidenced that the manipulation had been effective, the results related to Hypothesis One evidenced that the manipulation which was to effect the subjects causal attributions for failure on the Anagram Task was relatively ineffective. Several factors deserve consideration in the explanation of this difficulty. First, it had been assumed, based on previous research such as that of Petzel and Gynther (1970), that the solution of anagrams was a task in which causal attributions for an obtained outcome could be manipulated. However, debriefing evidenced that many subjects had had previous experience with anagrams, usually in the form of the JUMBLE in the daily papers, and as such these subjects had made causal attributions for outcomes on this type of task in the past. Thus, this earlier experience in "naive causal analysis" may have limited the effectiveness of the manipulation.

Secondly, attribution theory and previous research (Johnson, Feigenbaum, & Weiby, 1964; Fitch, 1970; Frieze & Weiner, 1971) had suggested that individuals tend to attribute failure outcomes to external factors. The results obtained in the current study evidence that the experimental manipulation used to effect internal attributions was not sufficient to overcome this bias, subjects tending to merely reduce their external attributions somewhat when they received the Ability - Effort (Internal attribution) treatment.

A related finding which became apparent in the course of conducting the experiment was that subjects tended, when making an internal attribution, to attribute causality for the outcome to ability - the stable dispositional factor rather than to effort -

the variable motivational factor. Heiderian theory elaborated on this distinction and previous research by Weiner and Kukla (1970) had found that school children playing the role of "teacher" punished "learners" less severely when the outcome was related to lack of ability than when the perceived cause was a lack of motivation. Nevertheless, an assumption made in combining both effort and ability as internal attributional factors was that subjects would accept a certain degree of personal responsibility when the outcome was related to ability vis a vis no or limited responsibility for the outcome when attributions were to external factors. On the basis of comments of a number of subjects during debriefing, however, it became evident that when failure was attributed to ability, subjects accepted minimal personal responsibility since they seemed to feel they had no real control of this variable. Recent research by Luginbuhl, Crowe, and Kahan (in press) provides additional data to suggest that the distinction between internal attribution and external attribution appears inadequate since it does not account for the confounding effect of the stability-instability dimension of both internal and external attributions.

The fact that a much larger proportion of variance of the subjects' aggressive behaviour was accounted for when the data was re-analyzed based on subjects' EXT-INT scores is consistent with the outlined difficulties in reference to Hypothesis One. The re-analysis, however, did not eliminate the possible effects created by the stability-instability dimension, and only reduced the effect of subjects' tendencies toward external attributions.

In summary, it would appear that using the anagram task may have introduced the contaminating effect of previous attributional experience, thereby reducing the effectiveness of the manipulation. Secondly, because (a) subjects attributed their unsuccessful outcomes more to external factors, and because (b) subjects may have denied personal responsibility for outcomes they attributed primarily to ability, the needed clear distinction between subjects who assumed personal responsibility for their outcome and those who externalized responsibility was not obtained. Given that the independent variable in Hypothesis One was questionable, it is not surprising that the data only weakly supported the prediction.

Limitations of the Frequency Data as a Test of Hypothesis One

The following question about Hypothesis One still remains: Given that the intensity data supported the hypothesis, why didn't the frequency data also support Hypothesis One? This question is especially important to answer since additional evidence of the limits of the frequency measure can be found in the present study. For example, while the differences between the results of the ANOVAs of the intensity measure and the frequency measure are most accentuated in the results related to Hypothesis One, the differences are readily apparent in the results related to Hypothesis Two as well.

Following post hoc analysis of the data, the reason for these differences became apparent. Rather than using both of the available modalities to express their aggressive reactions as had been anticipated, subjects on the whole tended to choose either the

intensity or the frequency modality. And in the vast majority of the cases, the modality of choice was intensity. In fact, approximately 40% of the subjects held their frequency values constant at the lowest possible level while varying the intensity levels to some value other than the lowest value available. Additionally, 89% of the subjects' intensity scores exceeded their frequency scores (although the total score possible for both measures was the same). From an analysis of the means - 13.3 for frequency as compared to 23.7 for intensity, it is evident that subjects' frequency scores tended to evidence minimal deviation from scores of eight (which is the basic level of one blast/error or #1 intensity/error) as compared to their intensity scores. It is concluded on the basis of this data that the results in toto would have been more definitive had only one dependent measure been used; and secondly, that intensity is clearly the more meaningful dependent measure in this study since it was the variable of choice used by most of the subjects to express their responsiveness to the independent variables.

Hypothesis Three

Although Hypothesis Three, the hypothesis which suggested that internals on the locus of control scale (as compared to externals) should attribute their misdeeds more to internal factors than should externals, received some support, the results were not definitive. Post hoc analysis of the individual subject's attributions evidenced that 43 subjects did in fact attribute their outcomes in the directions predicted by Hypothesis Three (using a score of ≤ 0 on the EXT-INT as an internal attribution). Of those 43 subjects, 17

subjects attributed their outcome in a direction consistent with their locus of control but in a direction opposite to the experimental manipulation related to Hypothesis One. Of the remaining 37 subjects, 23 subjects attributed their outcomes in the direction of the experimental manipulation and in a direction opposite to expectation in view of their locus of control. Fourteen subjects attributed their outcomes in a direction opposite to both their locus of control and the experimental manipulation which they received.

These results are most illuminating in understanding other aspects of the data. What is evident is that a personality variable such as locus of control did clearly have an effect upon the reactions of a number of the subjects, so much so that the experimental manipulation did not alter their tendency to either internalize or externalize responsibility for their outcomes. At the same time, for 23 subjects it would appear that the situational determinants were effective to the extent that the subjects' attributions were altered from that which would be expected in view of their locus of control. The work of Mischel (1968, 72, 73, 74) and Bowers (1973) clearly evidenced that either person variables or situation variables may account for variance, this depending upon both the person and the situation. And, in fact, the person x situation interaction may account for more of the variance than the sum of both of the separate variables (Bowers, 1973). The obtained results clearly evidenced that both situational and person variables are effective to a greater or lesser degree, or in combination. Mischel (1974), moreover, suggested that internal-external locus of control is likely not as

generalizable a variable as has been thought in that it was found that subjects who feel personally responsible for positive events may not internalize responsibility for negative outcomes, and vice versa.

The implications of the foregoing discussion seem clear. First, for some subjects one would anticipate that generalized expectancies of locus of control will affect their behaviour in specific situations. For others, situational determinants such as the experimental manipulations will have a greater effect than will the persons' locus of control and as such their attributions of causality will be contrary to expectations.

The attributions of the 14 subjects which were contrary to both their locus of control and the experimental manipulations may reflect either a failure of the Rotter's I.E. Scale in measuring their generalized expectancies, or possibly intentional misattribution within the experimental situation.

Hypothesis Four

Hypothesis Four, the hypothesis that internals on the locus of control scale (as compared to externals) will be less aggressive than externals was not significantly supported. This outcome isn't too surprising since both Hypothesis One and Three had received marginal support and Hypothesis Four was derived as a logical consequence of these two earlier hypotheses. As was outlined in reference to our discussion of Hypothesis Three, situational determinants seemed to have had a dramatic effect on a number of subjects such

that they attributed their outcomes in a direction inconsistent with their locus of control. This being the case, and considering the fact that aggression appears to be related to subjective attributions of causality, the obtained results are quite understandable.

However, as was indicated in our discussion of Hypothesis Three, a number of subjects' attributions of causality were relatively consistent with their locus of control, notwithstanding the particular experimental manipulation used. For these, and only these subjects, the initial logic of Hypothesis Four should still hold given the modest support for Hypothesis One, the effects of the situational variables which disrupted the results relative to Hypothesis Three having been largely eliminated. A comparison of means using the intensity measure of aggression clearly evidenced this to be the case. ($\text{EXT-INT} \leq 2$ = internal attribution; $N = 25$, \bar{x} internals = 20.68; $N = 22$, \bar{x} externals = 27.73; $T = 5.02$, $p < .001$.) This finding, then, provided conditional support for Hypothesis Four. That is, internals (as compared to externals) who reacted to the experimental situation in a manner consistent with their locus of control were found to be significantly less aggressive than externals.

Problems and Implications

Rule (1973) raised a critical distinction between types of aggressive behaviour, the implications of which had not been considered at the time the present study was designed and executed. She argued that the distinction between hostile aggression and instrumental aggression is somewhat artificial in that "the antecedent conditions which potentiate either hostile or personal-instrumental

motives result in the same attributions and feelings by the aggressor toward the victim." She proposed as a more useful distinction that between personally motivated aggression (which includes hostile and personal-instrumental aggression) and socially motivated aggression. The antecedents of socially motivated aggression are seen as "those pertaining to the perceived norms about the values of aggression." The aggression such as punishing behaviour is effected to achieve some goal that is deemed desirable to the victim.

The present study was designed such that subjects were instructed to punish under the guise of helping the confederate-subject to learn to perform a task. The critical question which Rule's study raises with respect to the present study is to what degree were subjects aggressing (punishing) because of socially motivated aggression? As no measures of the subjects' motives were taken, the question remains unanswered.

Assuming that pro-social motives may have determined certain of the subjects' aggressive reactivity, it seems reasonable to believe that these subjects should have been randomly distributed among treatment groups with the exception of possible differences between externals and internals (locus of control). This being the case, the differences in aggression which were found between groups should be attributable to personally motivated aggression providing that the logic and theory out of which the independent measures developed is correct.

One of the basic questions to which the thesis was addressed was: do persons' perceptions of responsibility for their own

behaviour affect their aggressive reactivity when their behaviour is punished? Because of our finding that the relevant experimental manipulation was somewhat weak, and additionally, that even when subjects attributed their outcome to ability, that this may not mean that they feel responsible, the question does not appear to be satisfactorily resolved. While the obtained results provide suggestive evidence that phenomenology is a relevant factor in explaining aggressive behaviour, the extent to which this is the case cannot be deduced from the current study.

Summary

Considering the outlined problems, both in theoretical conceptualization and in experimental design, the extent to which the proposed hypotheses were supported evidences the importance of both specific and generalized attributions in explaining aggressive behaviour.

Furthermore, the interrelationship of persons' generalized causal attributions (locus of control) and attributions in specific situations has received some clarification. While certain persons' generalized attributions appeared to be fairly subject to change based upon situational demands, other persons' beliefs about their own responsibility or external responsibility for their outcomes appeared to be fairly resistant to situational pressures.

The problems experienced with the independent measure which was to effect either an internal or external attribution of responsibility for task failure were illuminating in that they evidenced

subjects' bias to externalize responsibility for their failure outcome, providing additional support for failure as a determinant of attributions. They also evidenced the confounding effect of assuming that internal attribution can be equated with assignment of personal responsibility (re: difficulty with ability factor).

CHAPTER VII

SUMMARY

Heider's (1958) attribution theory, as well as Rotter's (1954) social learning theory, explain the manner in which persons attribute causality for their own and others' behaviour. Not only do people make attributions in specific situations, but also, they have generalized tendencies across situations to make either internal or external attributions. These attributions have been found to have a profound effect upon the way a person subsequently behaves.

The present study explored the relationship of (a) attributions about failing on a task and about being punished upon (b) subsequent aggression. It was hypothesized that subjects would be less likely to subsequently aggress if they attributed their failure to personal (internal) factors than if they attributed their failure to external factors in the environment (Hypothesis One). Provided that the punishing agent's behaviour was attributed to external causes (as compared to internal causes), it was proposed that he would not be held responsible, and therefore, less aggression would be directed toward him (Hypothesis Two). A third hypothesis was that internals (as compared to externals) on Rotter's I.E. Scale should accept greater responsibility for their task outcome. If this were so, and if accepting responsibility reduces aggression

(Hypothesis One), then a fourth hypothesis follows. Internals (as compared with externals) should be less likely to aggress against the punishing agent.

The subjects in this study were 80 Introductory Psychology students at the University of Manitoba. A 2 x 2 x 2 design was used with the subjects' I-E scores being one variable. The subjects were presented with an anagram task. Instructions were presented to manipulate the subjects' attributions for their performance on this task to either internal factors (ability-effort) or external factors (luck-task difficulty). Additional instructions in the Responsible Punisher condition were provided indicating that if necessary the other "subject" (actually a confederate) would personally choose the punishment to administer. In the Non-responsible punisher condition the experimenter instructed the confederate to punish the subject. All subjects failed and were punished with six blasts of medium-high intensity white noise. The roles of the confederate and the subject were then reversed; the subject was instructed to punish the confederate when he made mistakes on a paired-associates learning task. The dependent measures used were intensity and frequency of the subjects' aggression.

Because of the subjects' tendency to select the intensity measure and disregard the frequency measure of aggression, only Hypothesis Two was supported using both measures. Hypothesis One received support using the intensity measure. Re-analyzing the data using the subjects' own attributions of causality for task outcome strengthened the support for Hypothesis One dramatically, accounting

for 13% of the variance. Hypothesis Three received only marginal support, and almost no effect for Hypothesis Four was found. Post hoc analyses of subjects' attributions found that 43 subjects' attributions for task failure were consistent with their locus of control. Using these subjects, the data was re-analyzed. The results showed a clear I.E. effect in the direction predicted by Hypothesis Four.

This thesis, then, found general support for Heider's and Rotter's theory that persons' causal attributions do affect subsequent behaviour - in this case, aggressive reactivity.

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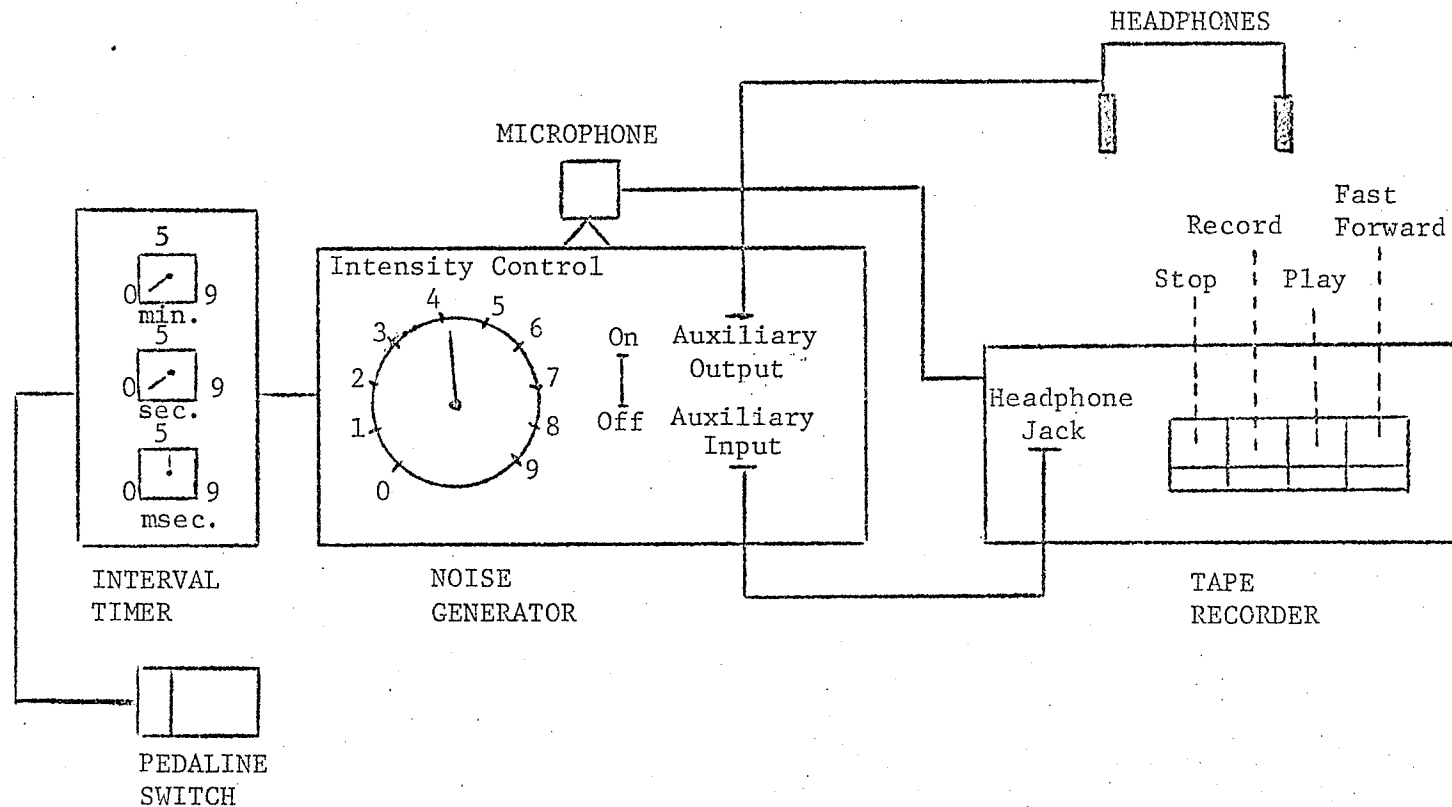
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APPENDICES

APPENDIX A

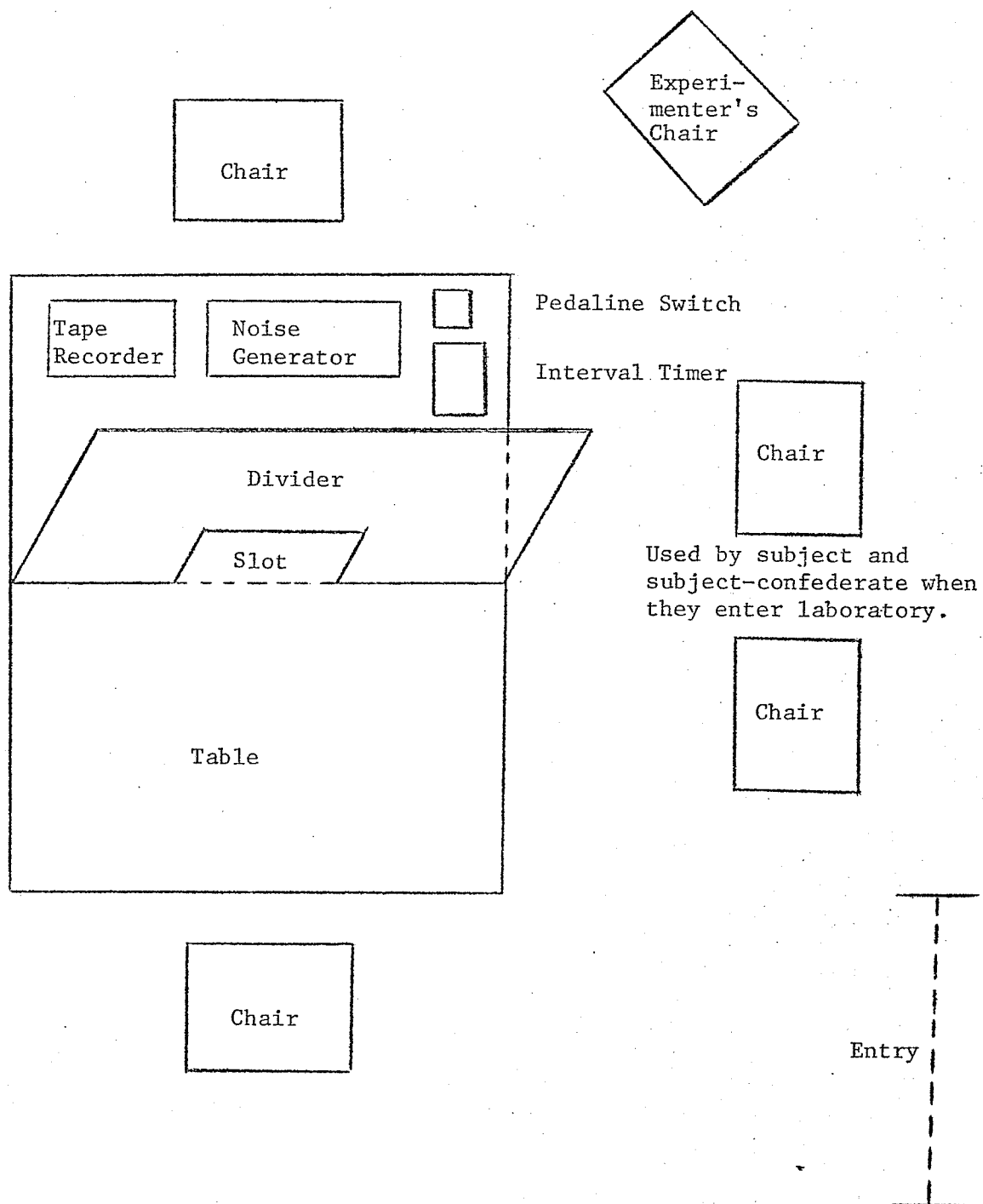
DIAGRAM OF EQUIPMENT SETUP



Instructions:

1. To obtain taped instruction - depress play control on tape-recorder.
2. To operate microphone - depress play and record controls simultaneously.
3. To operate noise generator - set intensity control at selected level and depress pedaline switch at selected frequency.

APPENDIX B
DIAGRAM OF LABORATORY



APPENDIX C

Read each item and circle the alternative (a or b) that most closely represents your opinion on the statements. In some cases it may be difficult to choose, but please select one.

1. a. Children get into trouble because their parents punish them too much.
b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. a. There are certain people who are just no good.
b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might just as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
b. By taking an active part in political and social affairs the people can control world events.
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
b. There really is no such thing as "luck".
19. a. One should always be willing to admit mistakes.
b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends upon how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
b. It is difficult for people to have much control over the things politicians do in office.

- 23. a. Sometimes I can't understand how teachers arrive at the grades they give.
b. There is a direct connection between how hard I study and the grades I get.
- 24. a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it clear to everybody what their jobs are.
- 25. a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.
- 26. a. People are lonely because they don't try to be friendly.
b. There's not much use in trying too hard to please people, if they like you, they like you.
- 27. a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character.
- 28. a. What happens to me is my own doing.
b. Sometimes I feel that I don't have enough control over the direction my life is taking.
- 29. a. Most of the time I can't understand why politicians behave the way they do.
b. In the long run the people are responsible for bad government on a national as well as on a local level.

External Items:

2a, 3b, 4b, 5b, 6a, 7a, 9a, 10b, 11b, 12b, 13b, 15b, 16a, 17a, 18a, 20a, 21a, 22b, 23a, 25b, 28b, 29a.

Buffer Items:

1, 8, 14, 19, 24, 27.

APPENDIX D
ANAGRAM TASK

ANAGRAM
TASK

OPUSGN

S L O O H C

P O S L U P

W E L Y O L

R F A T H E

E M A G L E

A L S E G T

APPENDIX E

QUESTIONNAIRE A - ALL ANAGRAM SUBJECTS

Four factors (luck, your own effort, the difficulty of the task, and your own ability) determine how well each person does on the anagram task. Naturally each of these factors can contribute to one's success or one's failure. Good luck, extra effort, an easy task, or high ability would lead to success. Bad luck, lack of effort, a difficult task or low ability would lead to failure. Please indicate how important each of these four factors was in determining your success or failure (i.e., your performance) on the anagram task. Indicate your answer with an X. Remember that the more important you feel one factor was in determining your performance, the less important other factors must have been. That is only logical.

To what extent was your performance caused by luck?

 : : : : : : : : : :

Not at all
due to Luck

About half
due to Luck

Completely
due to Luck

To what extent was your performance caused by your effort?

 : : : : : : : : : :

Not at all
due to Effort

About half
due to Effort

Completely
due to Effort

To what extent was your performance caused by the difficulty of the task?

 : : : : : : : : : :

Not at all due
to Difficulty
of Task

About half due
to Difficulty
of Task

Completely due
to Difficulty
of Task

To what extent was your performance caused by your own ability?

 : : : : : : : : : :

Not at all due
to Ability

About half due
to Ability

Completely due
to Ability

APPENDIX F

QUESTIONNAIRE B - ANAGRAM SUBJECTS WHO FAIL

Responsibility for your punishment could be assigned to either the experimenter or the other subject. To what extent do you see each of these individuals as having been responsible for your punishment?

1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 10 : 11

The experimenter was completely responsible; the other subject was not at all responsible.

The experimenter and the subject were equally responsible.

The subject was completely responsible; the experimenter was not at all responsible.

To what extent do you see the other subject to be either hostile or non-hostile?

1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 10 : 11

Not at all hostile

Extremely hostile

Are you angry now?

1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 10 : 11

Not at all angry

Extremely angry

APPENDIX G

PAIRED ASSOCIATES TASK

VERACITY - FALSITY
NON-SENSE - SIGNIFICANCE
OBSCURITY - LUCIDITY
CONCEIT - HUMILITY
SENSUAL - ASCETIC
COMMENCE - TERMINATE
IMPORTANCE - POWER
TRANSITORY - PERCEPTUAL
TIMIDITY - COURAGE
HOPE - DESPAIR
FALLACY - VERITY
AFFIRMATION - NEGATION

APPENDIX H

Dear Participant:

As you will no doubt recall, during your 1973-74 year at the University of Manitoba you participated in Psychology experiments as part of your Psychology 120 course. At the time, you participated in the AGAT experiment (the one with the noise punishment and the Anagram Task), and indicated interest in finding out what the results of the experiment were. These results are finally available.

In general, the results were as follows: Subjects who attributed failure on the Anagram Task mainly to luck or task difficulty were more punishing to the confederate (the other subject) than were subjects who attributed failure to ability or effort. This suggests that persons who felt responsible for their failure (attributing failure to personal factors) are less likely to react aggressively when they are punished for their failure.

A second area which was investigated was whether it makes a difference if the punishment you received was ordered by the experimenter or chosen by the confederate (other subject). The results clearly showed that the confederate received more punishment when he was seen to be choosing the amount of punishment (which was the same for everyone). This would imply that when people are seen to be responsible for their behaviour, in this case aggressive punishing behaviour, they will be held accountable, and perhaps receive greater punishment if their behaviour is undesirable.

A third area of study was an attempt to establish whether persons who generally see themselves as the "masters of their own destiny" ("Internals" on Rotter's [1954] Locus of Control Scale) are less aggressive than persons who see factors outside themselves as largely responsible for their outcomes ("Externals" on Rotter's Scale). While the results were equivocal, they tended to evidence that "Internals" are less aggressive than "Externals".

If you are interested in finding out more about the experiment, you may do so by obtaining a copy of my thesis which will be available in the near future in the Dafoe Library under the title: "An Attributional Analysis of Aggressive Reactions to Punishment".

I wish to apologize for my delay in forwarding this letter to you, and again wish to express my sincere thankyou for your participation in the experiment.

Yours truly,

Terrance J. Sawatsky
Graduate Student
U. of Manitoba Psychology Department

APPENDIX I

Analysis of Variance of the Intensity Measure of Subject's (N = 96)
 Aggressiveness as a Function of the Experimental Manipulations and
 Locus of Control Using the Data of All Subjects
 Including those who were Eliminated.

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Luck-Task difficulty - Ability-Effort (A)	1	58.29	0.63
Responsible - Non-responsible Punisher (B)	1	506.67	5.47
Internal - External Locus of Control (C)	1	3.00	0.03
A x B	1	2.65	0.03
A x C	1	42.45	0.46
B x C	1	0.05	0.00
A x B x C	1	111.82	1.27
Within cells	88	92.57	
Total	95		

$p < .025$

APPENDIX J

Analysis of Variance of the Frequency Measure of Subject's (N = 96)
 Aggressiveness as a Function of the Experimental Manipulations and
 Locus of Control Using the Data of All Subjects
 Including those who were Eliminated.

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Luck-Task difficulty - Ability-Effort (A)	1	3.88	0.07
Responsible - Non-responsible Punisher (B)	1	444.83	7.67*
Internal - External Locus of Control (C)	1	3.20	0.06
A x B	1	145.53	2.51
A x C	1	74.84	1.29
B x C	1	48.96	0.84
A x B x C	1	218.86	3.77
Within cells	88	58.02	
Total	95		

* $p < .01$

APPENDIX K

Analysis of Variance of Subject's (N = 80) Attributions of
 Responsibility - Non-responsibility for the Punishing Agents
 Behaviour as a Function of the Experimental
 Manipulations and Locus of Control

Source	<u>df</u>	<u>MS</u>	<u>F</u>
Luck-Task difficulty - Ability-Effort (A)	1	3.20	0.56
Responsible - Non-responsible Punisher (B)	1	387.20	67.67**
Internal - External Locus of Control	1	0.05	0.01
A x B	1	0.20	0.03
A x C	1	14.45	2.53
B x C	1	0.50	0.08
A x B x C	1	31.25	5.46*
Within cells	72	5.72	
Total	79		

* $p < .025$

** $p < .001$

APPENDIX L

SUPPLEMENTARY HYPOTHESES AND EXPERIMENTAL RESULTS

While the central concern in the present thesis was a study of possible effects of differential attributions upon aggressive reactivity, a corollary issue which received summary attention was a study of possible effects of differential attributions upon subjects' ratings of their experimental anger and judged hostility.

Rathaus and Worchel (1960), and Burnstein and Worchel (1962) found evidence to suggest that the diminution of aggression against a non-arbitrary frustrator vis-a-vis an arbitrary frustrator (re: Pastore's findings discussed previously) was due to inhibition of aggression rather than due to a reduction of instigation to aggression. Kelley (1971) suggested that the obtained results are consistent with Heiderian theory which assumes "that an interpretational process intervenes between the frustration and the behaviour or judgemental reactions to it. The injured person may feel quite angry, but because of social rules about retribution, he may constrain his overt reactions according to the perceived cause of injury" (p. 15).

Considering the cited research, the anger experienced following punishment should, if the effect of the causal analysis is the same for punishment as for frustration, be at the same level regardless of the treatment received in the current study.

Whereas the anger reaction may not vary as a function of differential attribution, persons' feelings of hostility would

appear to vary because they are subject to the same differential attributions of responsibility that were proposed for aggressive reactivity.

Jones and Davis (1965) in discussing attribution and in particular a study by Deutsch and Solomon (1959) suggested that "if a perceiver believes that he has done something to earn attack, he will presumably be less inclined to appraise his attacker negatively than if the attack was unreasonable or arbitrary" (p. 249). This study is clearly supportive of the current proposal relative to ratings of hostility.

Subjects were asked to rate their feelings of anger and hostility on Questionnaire B - Anagram Subjects Who Fail (Appendix F).

The results of the analysis of variance of the anger ratings support the hypothesis, no differences being evident in the subjects' anger ratings for either of the experimental manipulations. (Luck-task difficulty - ability-effort: $F = .39$, $df = 1, 72$, $p = n.s.$; Responsible - Non-responsible punisher: $F = 1.09$, $df = 1, 72$, $p = n.s.$). A significant interaction effect combining Responsible - Non-responsible punisher x Internal - External locus of control was, however, evident. ($F = 4.08$, $df = 1, 72$, $p < .05.$)

The degree of confidence which can be placed in these results would, however, appear open to question inasmuch as over 50% of the subjects rated their anger level at the minimum possible level - and as such, the non-significant results may simply reflect a statistical artifact of the measure used. Interestingly, an examination of the treatment means does evidence that all means for the

main effects are in a direction similar to those predicted for aggressive reactivity.

The results of the analysis of variance of the hostility measure evidenced a significant main effect for the Responsible - Non-responsible punisher treatment, ($F = 5.09$, $df = 1, 72$, $p < .05$). While the effect of Luck-task difficulty - Ability-Effort treatment did not reach conventional levels of significance, the treatment means were in the predicted direction ($F = .23$, $df = 1, 72$, $p = n.s.$; \bar{x} for luck-task difficulty = 2.55, \bar{x} for ability-effort = 2.35). A significant three-way interaction was also found ($F = 5.09$, $df = 1, 72$, $p < .05$). The failure to obtain a significant main treatment effect for the attribution for task failure manipulation is not particularly surprising considering the problems which were experienced with this independent variable (See Discussion).

While the results of the analyses of variance on the anger and hostility ratings provided some support for the proposed hypotheses, the support in general was too marginal to allow any definitive conclusions.