DIFFERENCES IN THE AMOUNT OF OVERT AGGRESSION EXPRESSED BETWEEN THE AGES OF 6, 9 AND 13 YEARS AS DEFINED BY SCORES ON THE HAND TEST

by Elizabeth Cameron Foucar-Egyed

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CURRICULUM STUDIORUM

Elizabeth Cameron Foucar-Egyed was born September 26, 1939, in Montreal, Quebec. She received the Bachelor of Arts degree in Fine Arts from Sir George Williams University, Montreal, Quebec, in May 1963.

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INTRODUCTION

Aggression is a human response, everchanging as it is modified by moods, circumstance and surrounding. Because of this vagueness, a clear grasp of the concept of aggression has escaped researchers, resulting in a host of descriptive and operational definitions by different authors. This lack of clarity has caused the measurement of aggression to be a difficult task and has called for the use of varied lengthy and ambiguous techniques which rely on the subjective judgment of the examiner.

Our society demands that overt aggression be controlled in the child and, from early childhood on, efforts are made to inhibit its expression. As he matures, the child's overt aggressive tendencies should gradually decrease as more acceptable learned responses are utilized.

Scores of The Hand Test,[1] the test to be used in this study, have been shown to differentiate between known aggressive and non-aggressive groups. Since this is so, the test may be able to indicate differences in the tendency to express overt aggression at different age levels, particularly the predicted decrease with increasing chronological age.

The possibilities for the use of this test with children are varied and numerous, particularly considering

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1 Barry Bricklin, Zygmunt A. Piotrowski and Edwin E. Wagner, The Hand Test, Springfield, Charles C. Thomas, 1962, vii-100 p. Hereafter referred to as The Hand Test.

the fact that the test is short, unthreatening and readily accepted by the child.

The presentation is arranged in three chapters, the first one dealing with theoretical considerations of aggression and its inhibition. Selected research is also included in the discussion. Reference to The Hand Test is made and the relevant studies with this tool are discussed. This is followed by a summary of the problem and a statement of the hypothesis.

The second chapter is concerned with the details of the experimental design, identification of the variables and statement of the null hypotheses as well as the manner of approaching the practical considerations of the problem.

The third chapter discusses the results obtained from this work and is followed by the Summary and Conclusions.

Appendices are to be found at the end of the presentation.

CHAPTER I

REVIEW OF THE LITERATURE

In 1939, Dollard *et al.*[1] developed a Frustration-Aggression hypothesis. On the basis of this original hypothesis and subsequent modifications, this writer would like to illustrate a hierarchy describing a behavioural-sequence involved in the manifestation of various forms of aggression. The discussion will also include aspects of the mechanisms of aggression, its inhibition and regulation as indicated by the custom of our society.

In this chapter, the material is presented in the following order: 1. Theoretical Considerations and Selected Research; 2. *The Hand Test* and Relevant Studies; 3. Summary and Statement of the Hypothesis.

1. Theoretical Considerations and Selected Research.

Dollard *et al.*[2] assumed that aggression is a "consequence of frustration" and equally so, frustration "always leads to some form of aggression."

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1 John Dollard, Neal E. Miller, Leonard W. Doob, O.H. Mowrer, and Robert R. Sears, *Frustration and Aggression*, New Haven, Yale University Press, 1939, 1-209 p.

2 *Ibid.*, p. 1.

Miller[3] modified the circularity of the one to one frustration-aggression relationship which implies that frustration has no consequence other than aggression and that all aggression is observable. The original hypothesis seems to imply that there is no distinction between the instigation to aggression and an aggressive act. He rephrased the hypothesis by stating: "Frustration produces instigations to a number of different types of response, one of which is an instigation to some form of aggression." The instigation to aggression may occupy any one of a number of positions along the hierarchy of different instigations aroused by a situation. If the instigation to aggression is strongest, aggressive behaviour will ensue. There may be instigations stronger than the instigation to aggression which prevent the occurrence of an aggressive act. For instance, a young boy is very hungry and the food is on the table. His mother calls him to supper. As he is on his way his sister calls out, grossly insulting him. However, instead of attacking her, verbally or physically, he continues to the supper table. Here the instigation to eat was greater than the instigation to respond aggressively to his sister.

Also, in our society punishment of acts of aggression may lead to the instigation of acts which occur instead of the aggressive response. For example, a child who is

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3 N.E. Miller, "The Frustration-Aggression Hypothesis", in Psychological Review, Vol. 48, 1941, p. 337-342.

frustrated because he cannot get a toy another child is playing with, may ask to share the plaything rather than beat the other up and take the toy. This non-aggressive behaviour occurred because his mother probably punished him for previous aggressive outbursts, inhibiting subsequent aggressive acts. In order to obtain the toy, he learned a socially acceptable manner of behaving in such instances.

Frustration is experienced when behaviour which leads to a desired goal-response is either blocked or interrupted.[4] When frustration occurs, aggression is the primary and characteristic response.

A goal-response is an act which "terminates a predicted sequence of behaviour."[5] It also reduces the strength of the instigation to the behavioural sequence so that the predicted sequence is no longer produced. The instigator is the "antecedent condition of which the predicted sequence of behaviour is a consequence."[6] The goal-response may not necessarily be of an active nature but may also be as passive as receiving sympathy or congratulations. Any blocking or interruption of the predicted behaviour-sequence leading up to the attainment of the goal-response is frustrating and aggression is likely to be a consequence.

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4 Dollard et al., Op. Cit., p. 7.

5 Ibid., p. 6.

6 Ibid., p. 3.

"Any sequence of behaviour, the goal-response to which is the injury of the person toward whom it is directed" is considered by the original authors as aggressive.[7]

Buss[8] objected to implied "intent" to injure which the original hypothesis suggests is characteristic of aggression. This, he said, implies that an aim or purpose exists behind the aggressive act. Applying "aim" or "purpose" to behavioural events poses a problem in that verbalization may not be possible or the intent misrepresented through attempts at verbalization. He suggests that the relationship between the reinforcement history of an aggressive response and the situation which elicited the behaviour be studied. However, one cannot determine what is an aggressive response without making implications as to the aim of a response and its expected outcome.

Buss also pointed out that this original attempt at defining aggression, the aim of which is the injury of others and seeing pain in others the reinforcer, omits such aggressive acts as instrumental expression. Where the interference between an individual and a reward is another organism, the intent of the aggressive act is not injury of another but achievement of the reward. For instance, the aim of a thief

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7 Ibid., p. 9.

8 Arnold H. Buss, Psychology of Aggression, New York, John Wiley and Sons, Inc., 1961, p. 1-3.

is not necessarily the injury of the victim but to obtain the money he is carrying. The reinforcer in this case is the attainment of the money, not the pain of the victim.

Either, intent to injure another or achievement of a reward other than injury to another can form a reinforced goal-response. On occasion, both these reinforcers are operating.

However, both the original hypothesis and the suggestions of Buss indicate that aggressive acts are directed against a living organism. Their definitions exclude aggression directed towards objects. For example, if an individual jams his finger in a drawer, in anger he may turn on the drawer and kick it. This is still aggressive behaviour, but object directed.

Buss[9] attributed aggressive behaviour to noxious stimuli or varieties of frustrations which can interrupt a behavioural sequence at any point along its activity continuum. However, noxious stimuli can indeed be frustrating and it is not a question of pointing out differences in frustrators but to determine whether or not a frustrator is present. As seen by the graph on page 10, there are acts which are aggressive but do not have any specific known frustrator. Such as the "professional criminal" whose main goal is monetary gain. Any aggressive behaviour which occurs merely facilitates the

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9 Ibid., p. 17-20.

attainment of this goal. For example, a thief may hit his victim on the head and take his money rather than ask for the money and when it is not forthcoming, strike out aggressively. Generalized undifferentiated frustration with life is not sufficiently localized to be the cause of one specific aggressive act.

In summary, a frustration leads to the intent or instigation to attack but not necessarily to aggressive behaviour. The intent to attack may be de-energized in some way or manifested in behaviour which is less aggressive, non-aggressive and/or directed toward a person or object other than the frustrator. This aggressive behaviour is reinforced by the release of built-up tension rather than the goal-response of seeing pain in others. Aggression is not always a consequence of frustration, and may be instigated by a desired goal-response other than the injury of any one person. It is motivated by the goal of attaining a reward and aggression may only function to facilitate the attainment of this reward. Aggression is here reinforced by the attainment of the reward.

There is usually an emotional reaction to frustration which is followed by an intent to attack. The strength of the intent depends upon:

a) the degree of emotion;

b) the strength of the competing responses on the hierarchy of responses;

c) the inhibitory effect produced by the anticipation of punishment.

If an emotion is not the energizing function behind the intent to attack, the strength of the intent depends upon the remaining two factors. The main emotional reaction to frustration is anger. Berkowitz[10] introduced the possibility of fear being an emotional reaction to frustration of an ongoing goal-directed activity. He proposes that when the frustrator threatens pain, fear is aroused. The strength of the emotion depends upon how vulnerable the individual feels in relation to the frustrating circumstance, and how much noxious stimulus is anticipated from the frustrator. However, it is not the frustration which produces the fear but the threat. Therefore, fear is not a reaction to frustration but to the threat, and if there is frustration of any goal-directed activity it becomes incidental to the threat and fear. The example Berkowitz uses--that the atomic bomb was a frustration of the urge to survive--is grossly generalized. The people of Nagasaki and Hiroshima were not frustrated, they were frightened.

One of the forces behind releasing the energizing mechanism of aggression is the intent to attack, the behavioural manifestation of which is the aggressive act. Aggressive

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10 Leonard Berkowitz, Aggression: A Social Psychological Analysis, New York, McGraw-Hill Book Company, 1962, p. 42-46.

behaviour is the attempt to achieve the goal-response of eliminating or revenging the frustration by noxious means; or, it facilitates the goal of attaining a reward. Aggression is reinforced by the release of tension, or by the attainment of a reward,[11] or both.

Kaufmann[12] proposed a definition of what aggressive behaviour involves when he suggested that it be "transitive, that is, directed against some object" and, secondly, "have a subjective probability of >0--on the part of the attacker--of reaching that object, and either removing it from the attacker's goal path, or imparting a noxious stimulus to it, or both." But, here aggression does not include acts of an interpersonal nature.

At this point, the writer will elaborate on the sequence of events proposed on the chart shown in Figure 1, page 9-10. Adopting the basic hypothesis that aggression is a consequence of frustration and elaborating upon the proposal of Buss that aggression is reinforced by the attainment of reward, the writer suggests the following behavioural sequences.

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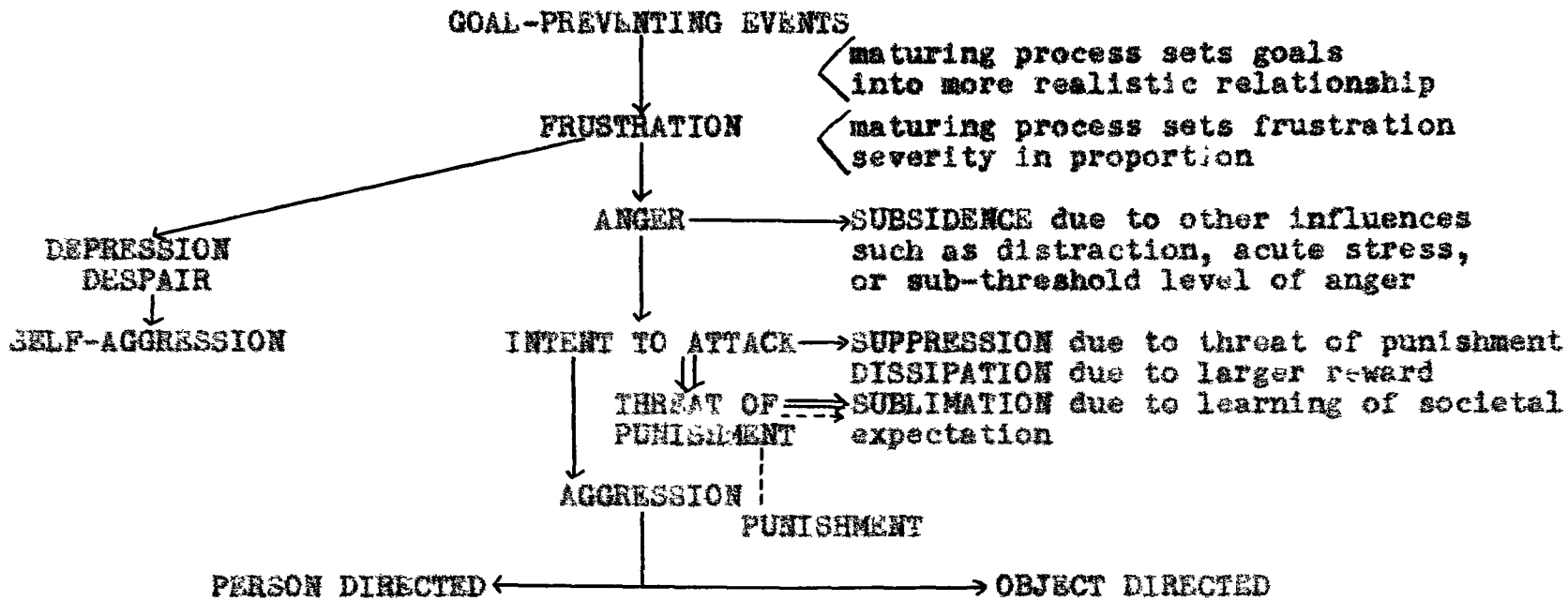
11 Reward here is used by the writer in a broader sense than that intended by Buss. Reward includes the attainment of the desired goal-response, whether it be seeing the pain of others, or obtaining an object or person, having an event occur, or all of these.

12 Harry Kaufmann, "Definitions and Methodology in the Study of Aggression", in Psychological Bulletin, Vol. 64, No. 5, 1965, p. 351-364.

I. INTERRUPTION OR BLOCKING OF GOAL-DIRECTED EVENTS



1) GUIDED-Person A aroused anger in Person B, B attacks A in order to
   a) remove source of frustration
   b) revenge frustration
2) DISPLACED-Person A aroused anger in Person B, B attacks person C, object or self
3) GENERALIZED-Person A aroused anger in Person B, B attacks A, B and C or objects

1) GUIDED

2) DISPLACED

3) GENERALIZED

(Continued)

Figure 1.- Graphical Representation of a Hierarchy of the Aggressive Sequence of Behaviour Instigated or Not by Frustration and Accompanied or Not by the Emotional Response of Anger.

Figure 1 (Cont'd.)

II. REWARD DIRECTED AGGRESSION
usually no frustration preceding and anger may not be initiator of activity

SOLDIER - societal rewards

PROF. CRIMINAL - monetary gain

SPORTS - societal rewards
self-esteem
internal reward

BUSINESS - financial reward
self-esteem

III. PHYSIOLOGICALLY PRODUCED AGGRESSION

PSYCHOPATH
CRIMINALLY INSANE

If aggression is a consequence of frustration, the initiator of aggressive behaviour is a goal-preventing event. The possibilities that could interfere with the expected outcome--aggression--are varied. The goal-preventing event elicits frustration. However, the physiological, cognitive and personality maturation which accompanies the growing up process, sets goals into a realistic relationship with daily living. For example, goal-preventing events which were frustrating to a child of five may not be so when he reaches the age of ten. This may be because he has acquired the skill necessary to obtain the desired goal or he has discarded the goal as unrealistic. Along with the proportioned viewing of goal-setting lies the evaluation of the frustration. As the individual matures, frustration is viewed in proportion to its severity and importance in the total life scheme. The amount of anger elicited by a frustration is determined by the outcome of this evaluation.

With anger aroused, the intent to attack should be initiated. However, anger may subside due to distraction which arouses another emotion and subsequent response. A loud noise may arouse fear and the urge to run away. Anger may be abated by acute stress which arouses anxiety and confusion. Or, anger may simply be at a sub-threshold level and insufficient to initiate the intent to attack.

If anger is sufficiently aroused, the intent to attack leads to aggression. Even when this intent is established,

interference of the sequence may occur. Here, between the intent to attack and the occurrence of the aggressive act, the effect of social teaching plays its important role. The anticipation and fear of punishment may suppress the intended behaviour. Dissipation may occur whereby the opportunity of gaining a larger reward interferes. For example, a child sees a friend eating an apple. The child wants the apple very badly and approaches the friend with the intention of grabbing the apple. The mother anticipates the course of events and produces a pear which she offers to the child. The intent to attack dissipates with the appearence of the pear, a "larger reward." The intent to attack can present itself in expression which is entirely non-aggressive or acceptably aggressive. This sublimation of the intent to attack is the outcome of learning where society succeeded in teaching an acceptable manner of expressing aggression or releasing the built-up energy through activities such as games or sports. The intent to attack also can be sublimated in energy-demanding pursuits which are totally unrelated to aggressive activities. This is similar to reaction formation and may occur at the conscious or unconscious level. Such one may see in "love thine enemy" attitudes, "do-good" volunteer workers, etc. What this writer terms sublimated intents to attack are similar to

Categories B and C of Feshbach's[13] alternative mediating responses and substitute responses of the original authors.[14,15,16] Both the goals and eliciting stimuli are distorted to suit the individual's needs.

If nothing interferes with the on-going momentum of the aggressive sequence, the intent to attack is behaviourally manifested in overt aggression. This aggression can be directed either towards persons or towards objects. It is at this level that punishment for aggressive behaviour is experienced. A fuller discussion of punishment is offered below. However, if the fear of punishment is overcome by the intent to attack, aggression will manifest itself in one of three forms in both person and object-directed behaviour. Aggression may be guided directly toward the person or object that initiated the sequence. The purpose of guided aggressive behaviour is to injure in order to a) remove the frustration and b) revenge the frustration. For example, if a student is angered by a screeching noise which severely interferes with

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13 Seymour Feshbach, "The Function of Aggression and the Regulation of the Aggressive Drive", in Psychological Review, Vol. 71, No. 4, 1964, p. 257-272.

14 Dollard et al., Op. Cit., p. 8-9.

15 Leonard W. Doob and Robert R. Sears, "Factors Determining Substitute Behaviour and the Overt Expression of Aggression", in Journal of Abnormal and Social Psychology, Vol. 34, No. 3, 1939, p. 293-313.

16 Robert R. Sears, "Non-Aggressive Reactions to Frustration", in Psychological Review, Vol. 48, No. 4, 1941, p. 343-345.

his studying, the subsequent behaviour would be designed to stop the noise. No doubt, this behaviour could be aggressive. An example of revenge would be aggression against the deliverer of an insult. The insult has done no physical harm, is not overtly repeated, but the blow to self-esteem demands that the situation be righted by a retaliatory aggressive act.

Aggression can be displaced onto an object or person other than the initiator of the aggression, or can be displaced to oneself. This displaced aggression is partially inhibited by the threat of punishment likely to be received by the frustrator. Thus, the aggression is displaced to a safer recipient. The familiar example of the man who as soon as he walks in the door kicks the dog, yells at the kids and beats his wife because he had a rough day at work, is an instance of displaced aggression. Displaced aggression directed at the self can be observed in the behaviour of children and adolescents who run away from home or hurt themselves because of felt unfairness. This retaliatory behaviour is accompanied by the "you'll be sorry" attitude and is a manner of "safely" expressing defiance against parental authority.

The intent to attack may manifest itself in generalized aggression. A foreman who is annoyed with the poor performance of one of his employees may show general displeasure with the whole crew.

Person-directed aggression is one of the two branches of aggressive expression originating from frustration and the arousal of anger. Object-directed expression is the second branch. Object-directed aggression may be guided, displaced or generalized as in person-directed expression. However, the influence directing the form of expression is not fear of retaliation from the object but lack of satisfaction in not having a response to the acting out. Thus, guided object-directed aggression is accompanied by a very strong intent to attack which overcomes any thoughtful differentiation of targets. A finger is jammed in the drawer and the extent of the frustration and anger is so intense that striking out at the drawer itself satisfies the aggressive intent. However, in displaced and generalized object-directed aggression the anticipated lack of response from the object directs the aggressive behaviour onto those who can feel the intent to attack, and upon whom the release of tension can be burdened.

Aggression may well be reinforced by the relief gained by the result of tension reduction. But, even this relief may be dampened by punishment. However, the release may be achieved through expression of a sublimated response.

Self-aggression, other than that expressed under the displaced person-directed category, results from goal-preventing events and frustration. However, depression and despair are the usual accompanying emotions. Suicide is the extreme example of this self-aggression.

There is another category of aggressive behaviour where frustration is usually not the preceding instigation and anger may or may not be the initiating force. This is reward-directed aggression in which the societal, monetary, self-esteem, internal and financial rewards gained are the reinforcers. For example, the businessman whose one goal in life is to make a million dollars, will not cringe at the thought of stepping on others in order to achieve this aim. The intent to injure or attack others is incidental to the goal-directed behaviour-sequence, where the attainment of the reward is the paramount aim and reinforcer.

A third category of aggression includes that behaviour which is physiologically produced. Under this category would fall the psychopath--for those who adhere to the theory that psychopathy is a predetermined physiological condition.[17]

In the second and third categories of aggression, punishment or the anticipation of it has little inhibitory effect upon aggressive behaviour. Since the thesis is concerned with the inhibition of aggression, the remainder of the discussion will center around the role punishment plays in inhibiting overt aggressive behaviour as described in Category I of the chart.

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17 Stanley Schacter and Bibb Latané, "Crime, Cognition and the Autonomic Nervous System", unpublished paper from Columbia University, 1964, 1-69 p.

The aggressive behaviour-sequence is designed to reduce only the secondary, frustration-produced instigation and has no effect on the original instigation. Removal of the interference (i.e. frustration) will result in the resumption of the original predicted behaviour-sequence which will lead to the original desired goal-response.[18] Where frustration is absent, the aggressive behaviour merely facilitates the attainment of the reward.

An achieved goal-response has a reinforcing effect that induces the learning of the behaviour which preceded the attainment of the goal-response.

As the behaviour-sequence which leads to the attainment of a non-aggressive goal-response can be learned, the behaviour-sequence leading to the attainment of an aggressive goal-response can also be learned through reinforcement by the success of eliminating or revenging frustration, and relief of the built-up tension.

However, our society does not tolerate overt aggressive behaviour and as it is being learned, efforts are made to regulate it.

Within the psychological principles of the Frustration-Aggression hypothesis of Dollard et al., aggression is inhibited essentially by the anticipation of punishment, and "the strength of the inhibition of any act of aggression varies

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18 Dollard et al., Op. Cit., p. 11.

positively with the amount of punishment anticipated to be a consequence of that act."[19] These authors propose certain factors which influence the strength of instigation to aggression and its relation to the strength of the aggressive act, as well as the relation of amount of punishment to the degree of inhibition of aggression. This presentation will not include the details of these psychological principles. It is only important to note here that aggression is inhibited essentially by the anticipation of punishment.

Dollard et al. state that the punishment-inhibition principle is derived from the law of effect and thus suppose that the actions which have been followed by punishment will "cease to occur."[20] Estes[21] has shown that punishment arouses an emotional response (anxiety or fear) which is an inhibitory factor of overt expression. However, the aggressive response remains in the subject's repertoire of responses with most of its original strength. Permanent weakening of a response occurs with a sufficient number of unreinforced elicitations only. Thus, punishment, rather than eliminating overt expression of aggression, temporarily suppresses it.

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19 Ibid., p. 33.

20 Ibid.

21 W.K. Estes, "An Experimental Study of Punishment", in Psychological Monographs, Vol. 57, No. 263, 1944, 44 p.

Buss[22] suggested that when there are competing responses, punishment is more likely to have a longer lasting effect than if there were no such responses. Fortunately, as Miller[23] has pointed out, frustration does not always elicit overt aggression. The individual learns to utilize sublimated responses which do not elicit punishment and these responses trade places on the hierarchy of habit strength.

> Successive punishment of the aggressive response and reinforcement of the non-aggressive response, should lead to a weakening of the aggressive response, not only in the presence of the adult (punishing agent) but also when there is no threat of punishment.[24]

Thus, it is important that the individual have non-aggressive responses in his repertoire which are substituted for the punishable aggressive ones. These non-aggressive responses he learns through experience. Thus, if an acceptable response (i.e. verbal persuasion) is learned before the aggressive tendency is evoked, the new mode of responding may become substituted for the old aggressive response tendency, especially if this response-sequence is reinforced.

Punishment is not only defined as the intent of another to inflict injury, but is also understood in a broader sense. 'Punishment, in essence, is equivalent to the occurrence

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22 Buss, Op. Cit., p. 56.

23 Miller, Op. Cit., p. 337-342.

24 Buss, Op. Cit., p. 56.

of pain, but refers to the objective conditions of pain rather than to the facts of immediate experience"[25] such as spanking, insulting remarks, ostracism and deprivation of material comfort and freedom. These "facts of immediate experience" carry the intent to injure, but this intent is not essential to the concept of punishment. Punishment is also effective in the following two forms. The injury of a loved person or object with whom one has identified is essentially a punishment directed at oneself. Also, the anticipation of failure is equivalent to the anticipation of punishment. Berkowitz[26] suggested that even a slight sign of disapproval from others is usually sufficient to inhibit aggression. The need for group approval and affiliation being the motivating factor. Any threat of non-response or disapproval is sufficient to arouse conflict and the anticipation of what is interpreted as punishment. The influence of social teaching and the conflict of two approach drives--aggression and affiliation--is seen in four and five year old children in an experiment by Gordon and Cohn,[27] where one group, aware of social relationships, displayed less aggression in a subsequent

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25 Dollard et al., Op. Cit., p. 34.

26 Berkowitz, Op. Cit., p. 78-79.

27 Jesse F. Gordon and Faye Cohn, "The Effect of Fantasy Arousal of Affiliation Drive on Doll Play Aggression", in Journal of Abnormal and Social Psychology, Vol. 66, No. 4, 1963, p. 301-307.

doll play session than the group which had not learned to be affiliation-concerned.

As Estes[28] pointed out, punishment must be of middle intensity to be effective. Weak punishment is not an inhibitor and punishment which is too severe will elicit anxiety and/or flight. However, punishment will inhibit one type of response but may also elicit new aggression. Depending upon the comparative strength of the positive and negative reinforcers, the effect of the punishment is thereby determined. For example, a thief whose victim retaliates has received punishment, but if he obtained the money, he achieved the reward as well. It is most probable that the attainment of the money is more positively reinforcing than the negative reinforcement received from the injury administered by his victim. The reinforcement history of the response, as Buss[29] indicated, is important. The punishment is effective if limited to the immediate situation and is a negative reinforcer of only the aggressive response that preceded it. Also, punishment is more effective if it is felt before reinforcement gained from the aggression is experienced.

However, situations which tend to evoke aggression elicit the anticipation of punishment or "aggression anxiety." This results in a conflict between the instigation to express

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28 Estes, Op. Cit., 44 p.

29 Buss, Op. Cit., p. 1-3.

aggression and the instigation to avoid expression. Chasdi and Lawrence[30] assumed that these instigations summate algebraically; thus, "if the tendency to express aggression remains constant, the probability that aggression will occur decreases as aggression anxiety increases." The terms "instigation to" and "tendency" are here synonymous. Also, if the aggression anxiety surpasses the tendency to aggression, aggressive behaviour will be inhibited. In the above study, the authors examined the influence punishment would have on the frequency and intensity of aggressive acts in doll play sessions. They assumed that the fantasy activity expressed in doll play is the product of the same psychological principles that govern all behaviour. Thus, they hypothesized and found that punishment of aggressive behaviour in doll play decreases the frequency and intensity of aggressive behaviour. Punishment was found to be effective only for the immediate subsequent doll play session where frequency and intensity of aggressive behaviour decreased markedly. In the following doll play sessions, however, frequency and intensity rose above its original degrees. Here, punishment did inhibit overt expression of aggression, but only temporarily.

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30 Eleanor Hollenberg Chasdi and Margaret Sperry Lawrence, "Some Antecedents of Aggression and Effects of Frustration in Doll Play", in D. McClelland (ed.), Studies in Motivation, New York, Appleton-Century-Crofts, 1955, p. 517-528.

Punishment, in our society, is usually administered by authority figures such as teachers, parents, administrators, etc. Thus, it would seem appropriate to suggest that less aggression would be expressed toward authority figures than toward peers such as friends, siblings or inferiors. In a study of Cohen[31] college women judged that "people" would express more aggression toward peers than toward authority figures. The punishment expected from the authority figures would seem to be the inhibiting factor in expressing aggression. McClelland and Apicella[32] found that severely frustrated subjects displayed significantly more overt reaction than moderately frustrated subjects in an experiment which was designed to permit subjects an uninhibiting atmosphere for expressing aggression by using a student experimenter who did not represent the prestige of faculty and could not be expected to punish. As the experimenter's hostility toward the subject increased, the response shifted in the direction of anger and aggression. Worchel[33] found the more hostile

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31 A.R. Cohen, "Social Norms, Arbitrariness of Frustration and Status of the Agent of Frustration in the Frustration-Aggression Hypothesis", in Journal of Abnormal and Social Psychology, Vol. 51, 1955, p. 222-226.

32 D.C. McClelland and F.S. Apicella, "A Functional Classification of Verbal Reactions to Experimentally Induced Failure", in Journal of Abnormal and Social Psychology, Vol. 40, 1945, p. 376-390.

33 P. Worchel, "Catharsis and the Relief of Hostility", in Journal of Abnormal and Social Psychology, Vol. 55, 1957, p. 238-243.

feelings were expressed in the presence of an assistant of less prestige than toward the experimenter. Graham, Charwat, Honig and Weltz[34] found that the intensity and frequency of aggressive behaviour was related to the status of the attacker. The aggression was greater when the attacker was a peer, because the amount of punishment anticipated was not seen as much of a threat. The frequency of aggression was least when the attackers were authority figures. The intensity of aggression increased with the instigation to aggression when the attackers were peers, but when the attackers were authority figures this relation was reduced. Doob and Sears[35] found that the amount of overt aggression is inversely related to the amount of punishment anticipated in a group of college males they studied.

Thus, it may be concluded that both the anticipation of punishment and punishment itself inhibits aggression. If the threat of punishment comes from an authority figure the certainty that aggression will be inhibited is greater than if the threat is given by peers or inferiors.

However, the inhibition of aggression is also a frustration which according to the original hypothesis, should be followed by aggression. But, "the greater the degree of

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34 Frances K. Graham, Wanda A. Charwat, Alice S. Honig and Paula C. Weltz, "Aggression as a Function of the Attack and the Attacker", in Journal of Abnormal and Social Psychology, Vol. 46, 1951, p. 512-520.

35 Doob and Sears, On. Cit., p. 293-313.

inhibition specific to a more direct act of aggression, the more probable will be the occurrence of less direct acts of aggression."[36]

Yet, anger may still be elicited by punishment. Anger lowers the threshold for the aggressive response and, when the threat of punishment is not present, an event which would not ordinarily elicit aggression may do so. Thus, it may be learned when it is safe to express aggression. Then the effect of punishment becomes effective only when the punishment immediately follows an event and when the punishing agent is present.[37] Fortunately, generalization occurs, as suggested by the original authors,[38] but the farther the stimulus situation is from the original one, the weaker the effect of punishment. Buss' solution is to punish in a variety of situations so that simulus generalization overlaps and the individual feels unsafe in expressing aggression in any circumstance.

Through the years of growth internal standards are absorbed by which one maintains one's behaviour. A model of behaviour is developed by learning what is expected, and this model is maintained by occasional threats of punishment for intended deviations from it and by continuing social reinforcement.

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36 Dollard et al., Op. Cit., p. 40.

37 Buss, Op. Cit., p. 59.

38 Dollard et al., Op. Cit., p. 34.

In summary, it has been shown that direct expression of aggression is temporarily inhibited by punishment or anticipation thereof. If a new response can be learned while aggression is suppressed, the new response will become a substitute for the old aggressive one, especially if the new response is reinforced by the attainment of a reward or the removal of the frustration. It is thus learned that aggressive acts are not the only successful responses to eliminating frustration. By using sublimated responses, punishment can be avoided. The display of aggression becomes less frequent as the individual gains more experience through the years and develops a model of behaviour to which he can adhere. He learns what are socially tolerated and successful ways of reacting to and eliminating frustration.

The control of aggressive behaviour begins with the regulation of childhood aggression. The first regulators of childhood aggression are the parents. Therefore, the parents or parent-surrogates are the cultural representatives through whom the child obtains his first glimpse of societal restriction. Society itself has learned that coöperative living cannot be maintained without regulation of aggressive behaviour. Whiting and Child[39] have found that for the most part the negative attitude of society toward the display of

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39 J.W.M. Whiting and I.L. Child, Child Training and Personality, New Haven, Yale University Press, 1953, p. 98-99.

aggression in children is continuous. There is no age at which the child is suddenly exposed to the demands of social conformity and is expected to change from a period of total freedom of expression to one of restraint. He learns from the beginning that aggression is not tolerated.

Having the ability to learn presupposes a degree of cognitive, physiological and personality maturity of the learner. This maturity develops in the normal individual with chronological age. During this growth internal standards of behaviour are developed. Therefore, it may be assumed that less overt aggression is manifested at the higher age ranges and that the tendency to express aggression is also diminished.

In a six-year follow-up study, Sears[40] found that punishment which, at the age of five, aroused aggression; at the age of twelve was interpreted as an inhibitor of aggressive behaviour. Punishment and the learning of socially acceptable behaviour during the years decreased the amount of aggression displayed at the older age range. Antisocial aggression was found to be positively related to high permissiveness and low punishment on the part of the parent, and was negatively correlated with prosocial aggression and aggression anxiety.

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40 Robert R. Sears, "Relation of Early Socialization Experiences to Aggression in Middle Childhood", in Journal of Abnormal and Social Psychology, Vol. 63, 1961, p. 461-465.

Goodenough[41] was one of the first experimenters to show through the doll play technique that aggression has developmental trends. Her findings suggest that a peak of aggressive behaviour shows itself around the age of one and one half years to two years from which time it decreases rapidly, rising a little around the age of six or seven, and then aggressive behaviour levels off.[42] Others since then have found the same trend--that aggressive acts decrease with age. Green[43] has shown that there is a steady decrease in a quarrelsomeness/friendship ratio as age increases, and that the highest quarrelsomeness indices are found at the three year old age level with a slight decrease around three or four years. There is also a decided drop at the five year level in the combined group of boys and girls. In the boys' group, the peak of quarrelsomeness was reached at four years of age and thereafter gradually decreased. Green also found sex differences, the girls being better "socialized" than the boys of her study.

Throughout the literature there is decided disagreement concerning the rises and falls of aggressive tendencies.

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41 Florence Goodenough, Anger in Young Children, Minneapolis, University of Minnesota Press, 1931, v-278 p.

42 Ibid., p. 70-73.

43 Elise Hart Green, "Friendships and Quarrels among Preschool Children", In Child Development, Vol. 4, 1933, p. 237-252.

Walter, Pearce and Dahms[44] have shown in their results that the tendency for boys to initiate aggressive behaviour is significantly greater at the five year level than at the four year level. From two to four years of age the number of aggressive acts increases. Also, the authors found that boys in their study had a tendency to respond more aggressively than girls. Ammons and Ammons,[45] using the doll play technique followed by an interview, discovered a peak of aggressive responding, as measured by their criteria, at the age of three with a gradual decrease approaching the age of four on to five years.

However, McKee and Leader[46] found no age differences between their three and four year age groups at all. It is possible that the ages selected were too close to show any significant difference between the two groups. Also, the results may have been contaminated by selection of subjects from two distinctly different socio-economic levels, lower and middle.

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44 James Walter, Doris Pearce and Lucille Dahms, "Affectional and Aggressive Behaviour of Preschool Children", in Child Development, Vol. 28, No. 1, 1957, p. 15-26.

45 Carol H. Ammons and Robert B. Ammons, "Aggression in Doll Play: Interviews of Two to Six-year-old White Males", in Journal of Genetic Psychology, Vol. 82, 1953, p. 205-213.

46 John P. McKee and Florence B. Leader, "The Relationship of Socio-economic Status and Aggression to the Competitive Behaviour of School Children", in Child Development, Vol. 26, No. 2, 1955, p. 135-142.

In her monograph, Sears[47] reported an age difference between three year old and five year old boys, the five year old boys were measured as more aggressive than the three year olds. No age difference was found between the three and four year olds.

There are many reasons for this existence of the varied differences in manifestation of aggression between age levels. Differences in socio-economic class, cultural traits, the sexes and so on; but, these reasons will not be reviewed here except when they are of direct and practical concern to the design. It is only important to realize here that these differences have been shown and that the general trend has been for the frequency of various measured aggressive acts to decrease as the higher age levels are reached.

These studies and many others in the literature are involved with the testing of preschool children with doll play, free play and observational techniques. Older groups are studied by results of interviews. After the five or six year levels the frequency of direct aggressive attacks on an instigator decreases as the child learns to cope more readily with social situations.

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47 Pauline Snedden Sears, "Doll Play Aggression in Normal Young Children: Influence of Sex, Age, Sibling Status, Father's Absence", in Psychological Monographs, Vol. 65, No. 6, 1951, iii-42 p.

Gesell and Ilg,[48] from their observational/interview techniques, propose the following growth gradients: a rise in aggression at two years of age, diminishing around three, rising at four then diminishing and rising again to the six year aggressive period. At the age of eight, the child is curiously rather than aggressively approaching his environment. Aggression here is chiefly verbal or a response may be shown by hurt feelings. In the ninth year overt activity may be of an aggressively playful nature or attacks are greeted by verbal, criticizing aggression. In demonstrating that increased self-control occurs, Patterson[49] has shown that more uncontrolled aggression was manifested in the six to nine year old range than in the ten to twelve year old range of his study.

Hurlock[50] concluded from her review and interpretation of the literature, that from late childhood the child enters a period of development which is anti-social. This stage is puberty. The worst aspect of anti-social behaviour occurs during a six to twelve month period preceding sexual maturity. In boys, this period is somewhere between the thirteenth and fourteenth birthdays, and in girls a year earlier. Anti-social

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48 Arnold Gesell and Frances I. Ilg, The Child From Five to Ten, New York, Harper Brothers, 1946, p. 293-294.

49 G. Patterson, "A Nonverbal Technique for the Assessment of Aggression in Children", unpublished paper, 1958, quoted in Buss, Op. Cit., p. 282.

50 Elizabeth Hurlock, Child Development (4th ed.), New York, McGraw-Hill Book Company, 1964, p. 369-374.

behaviour wanes as sexual maturity is complete. Dimock[51] proposed that widening social experiences and contacts as well as the development of heterosexual relationships supply contradictions and contrasts to what he has been taught and exercise the child's developing model of behaviour. However, the young adolescent's desire for social acceptability provides him with motivation to conform to social expectancies. This adolescent period starting around the age of thirteen is one in which social acceptability plays an important role in successful living.[52,53]

Gesell, Ilg and Ames[54] have observed that the pre-adolescent aggressive period occurs around the age of eleven (contrary to Hurlock's suggestion of thirteen). This eleventh year period is characterized by belligerent behaviour. The twelve year old's period of dichotomized emotion is followed by the reflective withdrawal and restraint of the thirteen

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51 Hedley S. Dimock, "A Research in Adolescence, The Social World of the Adolescent", in Child Development, Vol. 6, No. 4, 1935, p. 285-302.

52 Raymond G. Kuhlen and Beatrice J. Lee, "Personality Characteristics and Social Acceptability in Adolescence", in Journal of Educational Psychology, Vol. 34, No. 6, 1943, p. 321-340.

53 Anne Anastasi and Shirley Miller, "Adolescent 'Prestige Factors' in Relation to Scholastic and Socio-economic Variables", in Journal of Social Psychology, Vol. 29, First Half, 1949, p. 43-50.

54 Arnold Gesell, Frances Ilg and Louise Bates Ames, Youth: The Years from Ten to Sixteen, London, Hamish Hamilton, 1956, p. 336-341 and p. 153-155.

year old. After this age the individual develops into the socially expansive, energetic adolescent.

From the above investigations, it will be noted that overt aggressive behaviour generally decreases with chronological age. Theoretically, this writer proposes that the decrease is due to the inhibition of aggression by the threat of punishment. The development of internal standards maintains socially acceptable behaviour along with continuing social reinforcement. Instead of the lengthy and tedious use of doll play, interview and observational techniques, it is proposed that a test, which purports to give a measure of overt aggressive potential, demonstrate this decrease.

The following section of this chapter gives a brief description of the above-mentioned test, The Hand Test. A fuller account is given in the chapter on experimental design. An account of the relevant studies with The Hand Test is also given here.

2. The Hand Test and Relevant Studies.

The Hand Test is a psychological test, the stimuli of which are drawings of hands in ambiguous positions. There are ten stimulus cards, nine contain hand drawings in various poses. The tenth card is a blank one onto which the individual is asked to imagine the drawing of a hand and then to describe its activity, as he has been asked to describe the preceding nine.

The psychological assumptions upon which The Hand Test are based are described by Wagner:

> It is assumed, in a way of rationale, that prototypal action tendencies will be projected into pictures of hands since the hand, both ontogenetically and functionally, is crucial for interacting with and relating to the external world. In the development of the human organism the on-going, reciprocal, feed-back relationship between the brain and the hand makes it likely that perceptions and cognitions of semi-structured pictures of hands will mirror significant perceptual-motor tendencies in the subject.[55]

The author also posits that:

> (1) human behaviour is organized; (2) stimulus-specific perceptions of unstructured stimuli must, in some way, reflect higher-order behavioural tendencies; (3) responses to hands in ambiguous poses indicate these hierarchical organizations and are particularly amenable to a classification scheme which is psychologically and diagnostically useful.[56]

In a speech to the Eastern Psychological Association in 1962, Wagner[57] reported the results of a study in which it was postulated that delinquents would have a lower number of responses than normals, with a total number of responses equalling ten or less, considering ten as low. The second postulation was that the delinquents would have a higher

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55 Edwin E. Wagner, The Hand Test, Manual for Administration, Scoring and Interpretation, Akron, The Mark James Co., 1962, p. 1. Hereafter referred to as The Manual.

56 Ibid.

57 ---------, Application of the Hand Test Indicators of Antisocial Action Tendencies in Adults to Teen-age Juvenile Delinquents, unpublished speech given to the Eastern Psychological Association, April 28, 1962.

Acting Out Ratio[58] than the normal group with the AOR equal to or greater than plus one. Briefly, the AOR is designed to give a measure of an individual's tendency to act out in an aggressive way of any kind and the score is found by subtracting the sum of the "socially acceptable" totals from the sum of the "socially unacceptable" totals. That aggressive adult groups had a higher AOR than normal adult groups has been shown and reported by Bricklin, Piotrowski and Wagner[59] in their monograph.

Results of Wagner's study of delinquents showed that seventeen of the thirty in the delinquent group produced protocols of ten or less responses, in comparison to only six of the thirty in the normal group. With Yates' correction, the chi square value was 7.05 which is significant beyond the .001 level of confidence. Compared to ten normals, twenty delinquents had an AOR of plus one or over. Again, with Yates' correction, the chi square value was equal to 5.40, and significant beyond the .02 level of confidence. Thus, The Hand Test here had demonstrated its ability to separate a normal teen-age group drawn randomly from a pool of two hundred high school students, from an equal number of juvenile offenders, matched for sex and age to the nearest year, in

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58 Wagner, The Manual, p. 7, 26. Hereafter referred to as the AOR.

59 Barry Bricklin, Zygmunt A. Piotrowski and Edwin E. Wagner, The Hand Test, Springfield, Charles C. Thomas, 1962, p. 27-34.

terms of the total number of responses and the AOR score.

Their findings are confirmed by a subsequent study by Wagner and Hawkins[60] in which The Hand Test was used to differentiate non-assaultive from assaultive delinquents on the basis of the AOR of The Hand Test. Results of the chi square with a Yates' correction were significant beyond the .001 level of confidence, the AOR successfully differentiating seventy-eight per cent of the subjects.

In differentiating non-aggressive and aggressive schizophrenics, the AOR was significant beyond the .01 level of confidence giving a phi value of .33. This was found in a study by Wagner and Medvedeff.[61]

The results of the above studies give weight to the psychological assumption upon which the test is based, namely, that prototypal action tendencies will be mirrored in verbal responses to drawings of hands in ambiguous attitudes and poses.

However, doubt can be raised concerning the reversibility of the statement that high AOR's are given by aggressive persons. In the above-mentioned studies, the groups used have been known to be aggressive or non-aggressive and were

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60 Edwin E. Wagner and Roger Hawkins, "Differentiation of Assaultive Delinquents with the Hand Test", in the Journal of Projective Techniques, Vol. 28, No. 3, 1964, p. 363-365.

61 Edwin E. Wagner and Eugene Medvedeff, "Differentiation of Aggressive Behaviour of Institutionalized Schizophrenics with the Hand Test", in Journal of Projective Techniques, Vol. 27, No. 1, 1963, p. 111-113.

expected to and gave responses in the predicted direction. Whether unknown groups, in terms of aggressive tendencies as measured by The Hand Test, will give high AOR's or not is a point which may be partially answered by the present study.

Reviewing the content presented in the two previous sections, a summary of the data related to the problem is treated in the following and last section of this chapter. A statement of the hypothesis for the present study is also made here.

3. Summary and Statement of the Hypothesis.

Overt expression of aggression has been shown by the above-mentioned authors to decrease with chronological age. It is proposed that the anticipation of punishment inhibits aggressive behaviour and substitute responses which are known not to elicit punishment are utilized. These sublimated responses are socially acceptable ones. A model of behaviour is developed through experience and encourages a socially acceptable standard of behaviour. However, this learning does not suddenly occur but develops with physiological, cognitive and personality maturity. Thus, the tendency to express overt aggression diminishes with age.

Therefore, it is hypothesized that the scores of a test which measure the tendency to express overt aggression of any kind, indicate a decreased tendency at the higher age ranges.

With this hypothesis in mind, the experimental hypotheses and identification of the variables, a discussion of the procedure involved in the selection of the sample, the testing of the groups and organization of the material follows in the next chapter, Experimental Design.

CHAPTER II

EXPERIMENTAL DESIGN

Consideration of theoretical contributions and selected experimental studies has led to the formulation of the hypothesis put forth in the conclusion of the first chapter. The procedure used to test this hypothesis is described in this chapter under the following headings: 1. The Null Hypotheses and Identification of the Variables; 2. The Tool; 3. Selection of the Sample; 4. Procedure for Testing and Retesting; 5. Scoring and Initial Treatment of the Data; 6. Manner of Statistical Analysis.

1. The Null Hypotheses and Identification of the Variables.

The hypotheses, in null form, may be stated as follows:

There are no significant differences between the mean AOR of each age group and the mean AOR of every other age group with the age levels used in this study.

a) There are no significant differences between the mean number of Aggression responses of each age group and the mean number of Aggression responses of every other age group.

b) There is no significant relationship between the proportion of Aggression responses to the socially acceptable responses and the ages of each group.

c) There is no significant relationship between the proportion of Aggression responses to the total number of responses and the ages of each age group.

In this study, the tendency to express overt aggression, the dependent variable, is operationally defined as the following scores and combinations or ratios of scores of The Hand Test: the ACR, the Aggression responses, the ratio of the Aggression responses to the socially acceptable responses, and the ratio of the Aggression responses to the total number of responses. Age is the independent variable.

Several controls were made to prevent the possibility of their interference as further independent variables. These other controls were for sex, I.Q., academic performance, cultural membership and potential parental influence. They are discussed and explained more fully in Section 3 of this chapter.

2. The Tool.

The Hand Test is a simple tool to administer. The examiner does the recording while the subject recounts his impressions. The average time for administration is ten minutes. Scoring procedures follow a simple differentiation of responses into fifteen sub-categories for which basic definitions and specific scoring symbols are found in The

Manual.[1] The score for each sub-category is the sum of the responses scored in that category. The sub-category with which this study is directly involved is Aggression (Agg). The Aggression responses are "interpersonal responses involving the giving of pain, hostility or aggression."[2]

Each of the fifteen sub-categories falls into one of four major categories: Interpersonal (I), Environmental (E), Maladjustive (MAL), or Withdrawal (WITH). The following is a breakdown of sub-categories into the major categories:

Interpersonal - Affection (Aff), Dependency (Dep), Communication (Com), Exhibition (Exh), Direction (Dir), and Aggression (Agg).

Environmental - Acquisition (Acq), Action (Act), and Passive (Pas).

Maladjustive - Tension (Ten), Crippled (Crip), and Fear (Fear).

Withdrawal - Descriptive (Des), Bizarre (Biz), and Failure (Fail).

The numerical score for each major category is the sum of the sub-category scores included in that major category.

After the protocol has been scored and the totals for the major categories summed, the following ratios may be utilized. The Experience Ratio (ER), which "provides a useful overall estimate of basic, gross personality structure",[3]

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1 Edwin E. Wagner, The Hand Test, Manual for Administration, Scoring and Interpretation, Akron, The Mark James Co., 1962, p. 5-6.

2 Ibid.

3 Ibid., p. 7.

is computed by arranging the Interpersonal, Environmental, Maladjustive and Withdrawal scores in ratio form.

The AOR,[4] designed to estimate the tendency to act out in an aggressive manner of any kind, is arranged in ratio form by putting the sum of the "socially acceptable" Interpersonal responses, the Aff, Dep and Com, to the sum of the "socially unacceptable" Interpersonal responses, the Dir and Agg. It is this ratio with which this study is concerned. For research purposes, it is suggested[5] that the AOR be computed as the algebraic difference between the "socially acceptable" responses and the "socially unacceptable" responses. (i.e. If the sum of the Dep, Com and Aff amounted to 3, and the sum of the Dir and Agg amounted to 4, the AOR would be +1.)

A normal protocol should show a roughly equal balance between the socially acceptable and socially unacceptable sums of the AOR. A slight imbalance is expected in the ratios of children and teenagers.[6] The AOR itself "is an approximate measure of the probability of behaving in an overt, hostile, anti-social manner" of any sort.[7]

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4 Ibid., p. 7.

5 Ibid., p. 26.

6 Ibid.

7 Ibid., p. 7.

A Pathology Score is obtained by the following formula:

$$\Sigma \text{Maladjustive} + 2\Sigma \text{Withdrawal}$$

and is said to give an indication of the amount of psychopathology in the protocol.[8]

The Average Initial Response Time[9] is computed by finding the sum of the initial reaction times to each response and dividing by the total number of responses, excluding the Fail responses entirely. Another time score, the High minus Low Score is found by subtracting the lowest initial reaction time from the highest initial reaction time, giving a score which "reflects the maximum differential hesitation in responding to the ten cards",[10] assuming that psychological disturbance may manifest itself in what may be referred to as a "time shock."

The psychological assumptions which lie at the basis of The Hand Test were discussed in chapter one, section two, of this presentation. Mention was made of several studies which showed that the AOR scores for two known groups, aggressive and non-aggressive, were significantly different. The known aggressive groups obtained a significantly higher AOR than the known non-aggressive groups.

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8 Ibid., p. 27.

9 Ibid., p. 24.

10 Ibid.

Reliability[11] of The Hand Test was established by Wagner through the use of the Pathology Score, which distributed itself continuously over the protocols selected for his reliability check. The Spearman-Brown split-half (odd-even) reliabilities were obtained by comparison of the Pathology Scores for cards I, III, V, VII and IX to cards II, IV, VI, VIII and X, for each protocol. The reliabilities for the three independent scorers were A, .85; B, .84; and C, .85; and the correlations on the Pathology Score between scorers were: A and B, .86; A and C, .96; and B and C, .92. These results are subject to some doubt, since in the use of the Pathology Score, not all of the fifteen scoring categories are included in this one score; in fact, only the least frequent ones in terms of normal protocols are combined to give the Pathology Score. However, as a second index of inter-scorer reliability percentage agreements were computed by dividing the total number of agreements by the total number of scored responses, multiplied by one hundred. These figures were: A and C, 78%; B and C, 83%; and A and B, 80%.

In this project, test-retest reliability was computed by the Spearman Rank Order method, and interjudge reliability was determined by computing percentage agreements between scorers on all scores. This is discussed in section four of

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11 Ibid., p. 16.

this chapter as well as in the final chapter of the presentation.

The following section of this chapter will be concerned with a detailed account of the manner in which the sample for this research was selected. The section also includes mention of several studies, the results of which are relevant to the controls made.

3. Selection of the Sample.

With the permission of the Separate School Board of the City of Ottawa, the sample for this study was chosen from the pupils of the Separate Schools. The initial selection of the sample was made from lists of the results of group I.Q. testing done by the Referral Services Division of the Separate School system. At the time of selection all but the smaller schools had been tested, thus the experimenter had the opportunity of selecting the sample from the greater majority of the population of the Separate Schools of Ottawa.

The list utilized in the initial selection of the sample included the pupil's name, his age in years and months at the time of I.Q. testing, his I.Q. score with the date of testing, and the name of his school. The I.Q. score had been

obtained on one of the Dominion Tests.[12] The sample was chosen from the first, fourth and seventh grades tested; the ages within each grade level were six years, 6 months to 7 years; nine years, 6 months to 10 years; and twelve years, 9 months to 13 years, 3 months, respectively. These age levels were chosen because it was felt the difference between them would be great enough to show up any differences between the scores on The Hand Test, if the differences were to exist. Since there was no experimental demand for particular ranges of the independent variable, the above-mentioned age levels were chosen because the largest number of pupils of average I.Q. range (scores between 90 and 110) could be included in each age group.

The pupils included in the study were within the selected age ranges at the time of testing for this study (beginning of June, 1965). For example, if a pupil was tested for I.Q. at the beginning of February of 1965, and at that time was six years and ten months, he would be at the time of this testing seven years and two months; thus ineligible for inclusion in the study.

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12 For the first grade: Dominion Test, Group Test of Learning Capacity, Form A, Primary Revised Edition (1956), Toronto, Department of Education, Ontario College of Education, 1944.

For the fourth grade: Dominion Test, Group Test of Learning Capacity, Form A, Junior (1956) Edition, Toronto, Department of Education, Ontario College of Education, 1940.

For the seventh grade: Dominion Test, Group Test of Learning Capacity, Form A, Omnibus Edition, Toronto, Department of Education, Ontario College of Education, 1950.

Beyond selection of the ranges for the independent variable, five other controls were made. Intelligence, within the range of 90 - 110 of I.Q. as measured by the Dominion Tests, was chosen in an attempt to obtain average and representative groups of each age level. Only males were selected for this study. Results of studies show that differences in a propensity to aggress do exist between the sexes.[13,14,15]

The lists of group testing were utilized in determining and selecting age ranges, I.Q. and sex. Other controls were made from the OSR cards[16] which were held in the principal's office of the child's school. The information necessary was whether both parents as well as the boy were English-speaking North Americans; whether the boy had been successful in all his preceding grades and was not troubled with serious academic problems in his current year. The final piece of information, whether both the parents were alive and living in the home together, was obtained from the principal or from the subject's teacher. The reasons for the need to control

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13 Florence Goodenough, Anger in Young Children, Minneapolis, University of Minnesota Press, 1931, p. 71-72.

14 Pauline Sneddon Sears, "Doll Play Aggression in Normal Young Children: Influence of Sex, Age, Sibling Status, Father's Absence", in Psychological Monographs, Vol. 65, No. 6, 1951, p.111-42.

15 Harry Levin and Robert R. Sears, "Identification with Parents as a Determinant of Doll Play Aggression, in Child Development, Vol. 27, No. 2, 1956, p. 135-153.

16 General information cards containing complete and relevant information concerning the child and his academic achievement.

for these potential independent variables is explained in the following three paragraphs.

Several studies, in particular that of Whiting and Child,[17] indicate that there are decided cultural trends in the customs of tolerating or not tolerating aggression in the young child. Thus, language and cultural membership were controlled by demanding that each subject as well as his parents be English-speaking North Americans.

Bricklin, Piotrowski and Wagner[18] found that there is a significant difference ($P < .01$) between the AOR of children with reading problems and the AOR of those without. Since other problems of an academic nature might also interfere, each boy was of a normal grade placement and without serious academic difficulties.

In her research, Sears[19] discovered that the presence of either parent had an influence on the degree of aggression in a child. When the father was living in the home the boys were more aggressive. Whereas, without a father, boys tended to display fewer aggressive tendencies. Lewin and Sears[20]

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17 J.W.M. Whiting and I.L. Child, Child Training and Personality, New Haven, Yale University Press, 1953, p. 99-118.

18 Barry Bricklin, Zygmunt A. Piotrowski and Edwin E. Wagner, The Hand Test, Springfield, Charles C. Thomas, 1962, p. 33-36.

19 Sears, Op. Cit., p. 111-42.

20 Lewin and Sears, Op. Cit., p. 135-153.

found that the degree to which the child is aggressive depends upon how strongly the child identifies with the parent. Thus, it was felt necessary to be assured that both parents were living in the home. Children who were living with grandparents or foster parents were eliminated from the study. Boys from homes in which the parents were separated, divorced or, when known, one of the parents had remarried making the other adult a step-parent to the boy, were also eliminated. In the study of Sears', it was also found that sibling placement had an influence on the tendency to aggress. This was not controlled here. It is thought that this factor distributed itself quite normally throughout the groups.

It has been suggested[21] that socio-economic status has a bearing upon the extent of aggressive tendencies, the lower classes being more aggressive than the middle classes. However, Levin and Sears[22] did not find this difference. Since the sample was chosen, not from one particular area of the City of Ottawa, but from schools which included pupils from all social classes, it is assumed that pupils from these socio-economic classes are distributed normally within each age group of the sample.

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21 John P. McKee and Florence B. Leader, "The Relationship of Socio-Economic Status and Aggression to the Competitive Behaviour of School Children", in Child Development, Vol. 26, 1955, p. 135-142.

22 Levin and Sears, Op. Cit., p. 135-153.

With the sample thus selected and carefully reviewed, permission of a parent of each of the subjects had to be obtained before the study could be continued. Each boy was given a slip which briefly explained that a research project was being conducted within the school system, that the child was selected for testing and that the parent's consent was necessary before proceeding. A copy of this slip is found in Appendix 1. It gave no hint of the purpose of the research nor the nature of the test involved, so that the child would remain ignorant of what would be required until the moment of testing. Although several parents telephoned the principals, no information was given concerning the test. It seems that the parents who called were worried that the child might be given "a needle" for some sort of medical research. The children (four) whose parents did not grant permission were excluded from the study.

In summary, the total sample consisted of three age groups-- ages six years, 6 months to 7 years which included forty-seven pupils; nine years, 6 months to 10 years with a total number of forty-two pupils; and a last group included the ages twelve years, 9 months to 13 years, 3 months in which there were forty-three pupils. The total sample consisted of male subjects within the average I.Q. range of scores between 90 and 110 as measured by the Dominion Tests. Each boy was an English-speaking North American, as were his parents. There were no serious academic problems to be

considered, and each boy was from a home in which both parents were living together.

4. Procedure of Testing and Retesting.

Arrangements for testing of the subjects were made by appointments with the principal of each school. All the subjects were tested in that one visit. Testing was completed by the experimenter and by another graduate student of the Faculty of Psychology and Education of the University of Ottawa who was familiar with the test and material described in section one of this chapter.

The test was administered individually according to the strict instructions proposed in The Manual.[23] With the youngest group, six years, 6 months to 7 years, it was found that a more insistent approach was necessary. For instance, the child would often reply to the question "What is the hand doing?" with 'It's up." In this case it was necessary to say "Yes, but what is the hand doing?" or "Why is the hand up?" Most of the children then would give a scorable response. If a scorable response still was not elicited by Card I, the examiner presented the child with the next card (Card II) in accordance with the standard instructions. The above-mentioned was the only deviation from the instructions given by Wagner in The Manual.

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23 Wagner, Op. Cit., p. 3-4.

The testing itself was conducted in the nurse's office which, in most cases, was a well-ventilated room with adequate lighting and comfortable working space. If the nurse's room was occupied, an empty classroom was used. In both cases the examiner sat at a desk. At an angle to the examiner and at the side of the desk was a plain chair for the examinee.

After adequate rapport was established, the examinee was confronted with a brief explanation of what was required of him during the testing. The explanation, with moderate variations according to the demands of the particular situation, was as follows: "I have here ten cards on which there are drawings of hands. What I want you to do is to look carefully at each card and then tell me what the hand is doing. Do you understand?" The presentation of each card was accompanied by "What is this hand doing?" except if the subject continued by himself. Before presentation of the tenth card, which is blank, the subject was informed, "This last card is blank, and now what I want you to do is to imagine (the word pretend was used for the youngest group) a drawing of a hand on this card and then tell me what the hand is doing."

If a subject did not understand what was required of him, a further explanation was given offering no further information but simply rephrasing the instructions in a suitable manner.

Recording of responses was made on the Summary Sheets or on appropriate paper, as proposed in The Manual.[24]

Testing schedules were made for the two examiners and were kept according to the appointed time and date. The tests themselves were individually administered according to the above-described procedure.

A test-retest was conducted on twenty per cent of each of the groups tested at a time interval of seven days. Again, the retesting was conducted according to the above-described method of administering The Hand Test.

The following section will describe the manner of scoring, as well as the organization and the initial treatment of the data received from the results of the scoring.

5. Scoring and Initial Treatment of the Data.

Each of the subjects tested had the pertinent information printed on a ruled index card, five inches by eight inches. For each subject a Summary Sheet was prepared. On it were recorded the subject's responses to the test cards, reaction times and total times. At first these index cards were arranged in alphabetical order according to school. The index cards were taken to the schools at the time of testing and served the purpose of lists of those to be tested. After the time of testing, the cards were then arranged in the three

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24 Wagner, Op. Cit., p. 3-4, and p. 9ff for examples.

groups according to age ranges, but still in alphabetical order according to school, for easy location of any one card.

The Summary Sheets were arranged in no particular order and scored simply as they came into the scorer's hands.

Scoring symbols were given to each separate response according to the descriptions and basic definitions given in The Manual.[25] The Summary Sheets were scored independently by the two examiners. Scores were placed on Separate Scoring Sheets for each subject.

For centralization of all raw data, the scoring symbols were carefully copied from the examiner's Separate Scoring Sheet for each subject onto the back of the subject's index card. The first column of scoring symbols were the result of the first examiner's (in this case the experimenter) scoring, and the second column of results were those of the second examiner's scoring of each corresponding protocol and response. The Initial Response Times were recorded with each response and the total time of the test noted.

After scoring had been completed, scores for each sub-category were summed and entered on the front of the index card, along with the total number of responses. Averages and ratios were computed according to the instructions given in The Manual,[26] and also entered.

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25 Ibid., p. 5-6.

26 Ibid., p. 7.

The data having been accumulated and totalled, it was possible to proceed with a statistical analysis. The following and last section of this chapter is a description of the statistical proceedings involved.

6. The Manner of Statistical Analysis.

From the two independent scorings, an inter-judge percentage reliability was obtained by the following formula:

$$\frac{\text{Number of Responses Agreed}}{\text{Number of Responses Scored}} \times 100$$

A Spearman Rho[27] correlation was computed on twenty per cent of each age group given a retest, with the AOR scores. Three Rho's were not computed for each of the three age groups, but the groups were combined and the correlation was computed on the total number involved in the test-retest. The formula used is as follows:

$$\rho = 1 - \frac{6\Sigma D^2}{N(N^2 - 1)}$$

To test the main hypothesis, "t" tests[28] were used to test for significant differences between the six year, 6 month 7 year group[29] and the nine year, 6 month to 10 year group;[30]

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27 J.P. Guilford, Fundamental Statistics in Psychology and Education, New York, McGraw-Hill Book Co., 1956, p. 285-288.

28 Lawrence-T. Dayhaw, Manuel de Statistique, Ottawa, Editions de l'Universite d'Ottawa, 1963, p. 350-362.

29 Hereafter referred to as group A.

30 Hereafter referred to as group B.

between group B and the twelve year, 9 month to 13 year, 3 month group;[31] and between group A and group C. The "t" test was also used to test sub-hypothesis a) for significant differences between groups A and B; B and C; and C and A. This test was again used to test for significant differences between the mean number of total number of responses between each and every age group. The following formula was used for these "t" tests:

$$t = \frac{M_D}{\sqrt{\left(\frac{\sum X_1^2 + \sum X_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 N_2}\right)}}$$

To test the significance of the relationships mentioned in sub-hypotheses b) and c) a chi square[32] was employed. However, because of the vast number of zeros involved in both the numerators and denominators of the resultant proportions, T scores were computed for every raw score of each group of figures involved (Aggression scores, socially acceptable scores and total number of responses) all for the total sample. This was done so that the T scores would distribute themselves continuously throughout the total sample and not be limited to each respective age group. The formula used is as follows:

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31 Hereafter referred to as group C.

32 Baynaw, Op. Cit., p. 383-386.

$T = 10z + 50$

where $z = \frac{x - \bar{x}}{\sigma}$

In this chapter a discussion of the method of approach to the problem was presented. In the following and last chapter the results of the above-described statistical analysis are presented and subsequently discussed. Relevant comments are made during the interpretation in an attempt to more fully realize the potential of this project.

CHAPTER III

PRESENTATION AND DISCUSSION OF RESULTS

This chapter is concerned with the presentation and discussion of the results of the statistical analysis described in the preceding chapter. It also includes related comments. The first section of the chapter presents the results of the reliability analysis, followed by the results of the techniques used to test the stated null hypotheses. A next section is devoted to the discussion of those findings including relevant comments.

1. Presentation of the Results.

The inter-judge reliability, expressed in terms of percentage, between the two independent scorers is 90.5%.

The result of the Spearman Rank-difference Correlation Method for reliability of the test is .548, which is significant at the .01 level of confidence.

Six "t" tests were computed to test the main null hypothesis and null hypothesis a). The following was found in testing the main null hypothesis. There is no significant difference between the mean AOR of group A and the mean AOR of group B; nor is there any significant difference between the mean AOR of group B and the mean AOR of group C. The "t"

values are 1.427 and 1.43%, respectively. However, a significant difference exists between the mean AQR of group A and the mean AQR of group C. The "t" value of 2.901 is significant at the .01 level of confidence. A table giving further relevant figures is presented on page 60.

In testing null hypothesis a), only one significant difference was found, this is between the mean number of Aggression responses for group A and the mean number of Aggression responses for group B. The "t" value of 3.188 is significant beyond the .01 level of confidence. No significant differences were noted between the mean number of Aggression responses for group B and the mean number of Aggression responses for group C; nor were any significant differences found between the mean number of Aggression responses for group A and the mean number of Aggression responses for group C. The "t" values for these are 1.316 and 1.775, respectively. These figures are more fully substantiated in Table II on page 61.

In order to determine the true significance of the found differences between the mean number of Aggression responses of each of the age groups, "t" tests were computed between the mean number of total number of responses of each and every other age group. The relevant figures and "t" values are found in Table III on page 62. The only difference found not to be significant is that between group B and group C ("t" equal to 1.616). The "t" values for the difference between group A and group B (3.785)

Table I.-

Data for the Computation of "t" Tests of the Significance of the Differences in AOR Scores between each and every Age Group Considered by Pairs.

Group	Number	Σx^2	Mean	Diff.	"t"	Probability
A	47	131.959	2.000			
				.595	1.427	
B	42	204.037	1.405			
				.777	1.439	
C	43	309.969	.628			
				1.372	2.901	$<.01$
A	47	131.959	2.000			

Table II.-

Data for the Computation of "t" Tests of the Significance of the Differences in the Mean Number of Aggression Responses between each and every Age Group Considered by Pairs.

Group	Number	Σx^2	Mean	Diff.	"t"	Probability
A	47	23.652	.915			
				.609	3.188	<.01
B	42	46.458	1.524			
				.291	1.318	
C	43	39.665	1.233			
				.318	1.775	
A	47	23.652	.915			

Table III.-

Data for the Computation of "t" Tests of the Significance of the Differences in the Mean Number of Total Number of Responses between each and every Age Group Considered by Pairs.

Group	Number	Σx^2	Mean	Diff.	"t"	Probability
A	47	60.407	10.234			
				2.266	3.765	<.001
B	42	631.652	12.500			
				1.826	1.616	
C	43	1619.037	14.326			
				4.092	4.438	<.001
A	47	60.407	10.234			

and between group A and group C (4.438) are both significant at the .001 level of confidence.

The tables used for the chi square in testing null hypotheses b) and c) are found in Tables IV and V on pages 64 and 65, respectively. The chi square value found in testing null hypothesis b) is 15.239 and is significant beyond the .01 level of probability. The chi square value found in testing null hypothesis c) of 12.791 is significant beyond the .02 level of confidence.

2. Discussion of Results.

The inter-judge reliability percentage between the first and second scorers in this study of 90.5% is deemed adequate. The percentage agreement figures for inter-judge scorers in Wagner's study were as follows: Scorers A and B, 80%; Scorers A and C, 78%; and, Scorers B and C, 83%.[1]

The Spearman Rank-difference Correlation figure of .548 is significant at the .01 level of confidence. Thus, it may be concluded that the AOR is a reliable measure in this study with the subjects used. Assuming this score to be representative of the reliability of other test scores, it may be concluded further that the test itself is reliable.

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1. Edwin E. Wagner, The Hand Test, Manual for Administration, Scoring and Interpretation, Akron, The Mark James Co., 1962, p. 18.

Table IV.-

The Chi Square Contingency Table showing the Distribution of the Ratio of Aggression Responses to Socially Acceptable Responses as expressed as Decimals, over High, Medium, and Low Ranges, for each Age Group.

Ratios expressed as decimals	Ages in Years, Months			Totals
	6.6-7	9.6-10	12.9-13.3	
High (1.142-2.461+)	25	11	8	44
Medium (.807-1.141)	15	22	20	57
Low (.00-.806)	7	9	15	31
Totals	47	42	43	132

Table V.-

The Chi Square Contingency Table showing the Distribution of the Ratio of Aggression Responses to the Total Number of Responses as expressed as Decimals, over High, Medium, and Low Ranges, for each Age Group.

Ratios expressed as decimals	Ages in Years, Months			Totals
	6.6-7	9.6-10	12.9-13.3	
High (1.0-1.712+)	31	26	17	74
Medium (.751-.99)	4	10	16	30
Low (.00-.75)	12	6	10	28
Totals	47	42	43	132

Results of the "t" tests indicate that a significant difference exists between the mean AOR of group A and the mean AOR of group C. No significant difference lies between the same mean scores of group A and group B, nor between group B and group C. This may be caused by the fact that the AOR, a measure of potential overt aggressive tendencies, is actually incapable of distinguishing between the aggressive tendencies of groups so close in age as are the above; or, that there are no differences in aggressive tendencies between the age groups; or, that these age groups, which were arbitrarily chosen, do not correspond with the aggression curve which, although found to continually decrease as age increases, is nevertheless affected by plateaus, rises and falls of expressing the intent to attack. It is most probable that the last of the three explanations is the answer. It is proposed that a further study is needed with age groups at every chronological age range in order that a comparison may be made between the chronological age curve and the aggression curve as measured by these scores of The Hand Test.

In reviewing the figures for the mean AOR of each age group presented in column two of Table VI, page 66, it is noted that as the age increases the mean AOR, a measure of overt aggressive tendencies, decreases. Although a significant statistical difference was found between the first and last group only (as discussed above), a general decreasing trend is established by these figures. This finding is in

Table VI.-

A Table showing the Mean AOR (AOR), the Mean Number of Aggression Responses (Agg), and the Mean Number of Total Number of Responses (Resp) for each Age Group.

Group	AOR	Agg	Resp
A	2.000	.915	10.234
B	1.405	1.524	12.500
C	.626	1.233	14.236

keeping with the theoretical postulation of this study discussed in chapter one; namely, that as the child matures he outgrows the tendency to overtly aggress and learns more subtle, socially acceptable outlets of expression. This is strengthened by the results discussed in the following three paragraphs.

A rise in the mean number of Aggression responses, rather than the predicted decrease, may be explained by the fact that the mean number of total responses increased as the age level of the groups increased. As the child grows older and is exposed to more schooling and experience, his vocabulary and concepts increase. It is expected, therefore, that an increase in Aggression responses would accompany the increase in the total number of responses at the higher age ranges. The mean figures for the three age groups are to be found in Table VI on page 66.

Results of a "t" test show a significant difference existing between group A and group B in <u>both</u> the mean number of Aggression responses ($P < .01$) and the mean number of total responses ($P < .001$). A third significant difference lies between group A and group C in the mean number of total responses ($P < .001$).

The rise in the mean number of Aggression responses from group A to group B is to be expected since the rise in the mean number of total responses also increases significantly ($P < .001$), and the increased number would contain a certain

number of Aggression responses. However, where there are no significant differences (between groups B and C, in both instances) the trend, it will be noted in Table VI, is for an increased number of total responses with a decrease in Aggression responses. Although it is unsafe to predict from this one indication, it may possibly be suggested that with the previously proposed further research and examination, this trend for a decrease in Aggression responses with chronological age increase may develop significantly.

The main null hypothesis and null hypothesis a) may be partially rejected. Although there is not a significant difference between each and every age group, it may be concluded from the results that aggression, as measured by the AOR of The Hand Test, does decrease with chronological age. Also, it may be predicted that aggression, as measured by the Aggression responses of The Hand Test, would decrease even with the increase in the total number of responses with chronological age.

One observation which is relevant here is that, in this set of results, the adolescent unsocial period between the ages of thirteen and fourteen in the boys did not appear to be significantly strong enough to give indications of its presence as shown by the AOR or the Aggression scores. It is quite possible that the age range selected for group C was a few months too early to pick up this behaviour suggested by

Hurlock.[2] Whether the decrease in the AOR and Aggression responses at the thirteen year old level is an indication of the restrained control and suddenly altered behaviour which is characteristic of this age group, as proposed by Gesell, Ilg and Ames,[3] and Dimock[4] or not, cannot be determined from these results. However, the techniques employed by these authors differ, and the criteria for the manifestation of aggression also differ, as the authors' criteria of aggression may differ with the criteria laid down by The Hand Test. For instance, Hurlock[5] discusses withdrawal in communication at the age of thirteen but views this characteristic more as a part of the whole unsocial, belligerent attitude of this stage. Whereas Gesell, Ilg and Ames[6] regard the whole pattern of behaviour of the thirteen year old as reflective and controlled. Here a comparison of the aggression curve as maintained by the scores on The Hand Test to a chronological age level curve would suggest a trend for this one stage of development where

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2 Elizabeth Hurlock, Child Development (4th ed.), New York, McGraw-Hill Book Company, 1964, p. 369-374, esp. p. 372-373.

3 Arnold Gesell, Frances Ilg and Louise Bates Ames, Youth: The Years from Ten to Sixteen, London, Hamish Hamilton, 1956, p. 336-341 and p. 153-155.

4 Hedley S. Dimock, "A Research in Adolescence, The Social World of the Adolescent", in Child Development, 1935, Vol. 6, No. 4, p. 285-302.

5 Hurlock, On. Cit., p. 374.

6 Gesell, Ilg and Ames, On. Cit., p. 336-341, and p. 153-155.

the criteria would be known and could be subsequently studied.

Reviewing Table IV on page 64, the computed chi square yielded a significant value of 15.239 ($P < .01$). The trend falls in the predicted direction with the lower age group having a majority of individuals in the higher ratio bracket. From this it may be noted that as the individual increases in age his tendency to give Aggression responses decreases while his tendency to give Socially Acceptable responses increases. Thus, the null hypothesis concerning the relation between the proportion of Aggression responses to Socially Acceptable Responses and the age level of the individual can be rejected because here the relationship has been proven existent.

The chi square value attempting to indicate a relationship between the ratio (as expressed in decimals) of the mean number of Aggression responses to the mean number of total responses and age level is beyond the .02 level of probability. Studying Table V on page 65, the figures fall in the general predicted direction with the higher proportion of Aggression responses to total number of responses in the lower age ranges. This indicates, as predicted, that the greater number of Aggression responses, in proportion to the total number of responses per protocol, is given by the younger age groups. Also, the number of Aggression responses decreases gradually as age increases along with an increase

in the total number of responses. Thus, null hypothesis c) may be rejected accepting the .02 level of probability as of sufficient significance.

From the results described above one may accept the hypothesis that overt aggression, as measured by selected scores of The Hand Test does decrease significantly at the higher age ranges. Thus, it may be concluded that the tendency to express overt aggression is successfully inhibited. However, whether it is actually punishment and/or the anticipation of punishment which inhibits the expression of overt aggression cannot be shown by this study; nor can it be concluded that the development of internal standards, punishment and continuing social reinforcement maintains socially acceptable behaviour.

However, the above results are consistent with those found by the authors mentioned throughout this presentation. This study is further indication that aggression, however defined and measured, is so incompatible with peaceful coexistence that from early childhood on efforts in inhibiting and redirecting its overt expression are successful.

SUMMARY AND CONCLUSIONS

In a study which proposed that aggression, as measured by selected scores of a test which purports to measure overt expression of aggressive intent, would decrease with chronological age, it was found that the hypothesis of no significant differences between selected scores, combinations of scores and ratios of each and every age group could be partially rejected. The AOR, the mean number of Aggression responses and the ratios of Aggression responses to socially acceptable responses and Aggression responses to the total number of responses of The Hand Test are totals and ratios which distinguish between age levels. It has been demonstrated that there are significant differences, not between each and every age group, but at least in the predicted directions between age levels in the use of the AOR and Aggression scores. Significant relationships were found in the predicted direction between ratios and age levels, the higher ratios of Aggression to socially acceptable and to total number of responses found in the lower age ranges.

Further research, beyond testing aspects of the proposed aggressive hierarchy, directly suggested by this project may be conducted so that a finer comparison of the curve of aggression, as measured by the AOR and Aggression scores of The Hand Test, and the curve of chronological age can be made. There are also indications that differences in qualitative

content between each and every age group exist. Establishing normative scores for the indices of The Hand Test is indirectly related to this study, but essential to further use of this test with children.

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Berkowitz, Leonard, Aggression: A Social Psychological Analysis, New York, McGraw-Hill Book Company, 1962, ix-361 p.

This work discusses aggression as part of the individual's interaction with others. It presents a good historical background of the growth of the concept of aggression. The discussion of aggression is based upon the original Frustration-Aggression hypothesis and is centered around intra- and inter-group situational determinants of aggression. It is also a meaningful compilation of recent work done with aggression.

Bricklin, Barry, Zygmunt A. Piotrowski and Edwin E. Wagner, The Hand Test, Springfield, Charles C. Thomas, 1962, vii-100 p.

This is the first monograph published concerning The Hand Test. It contains descriptions and the details of preliminary studies done with the test. Included are statistical data of these studies and suggestions for further investigation.

Buss, Arnold H., Psychology of Aggression, New York, John Wiley and Sons, Inc., 1961, x-307 p.

A monograph which discusses aggression from a behavioristic viewpoint offering exacting criticisms and modification of the original Frustration-Aggression hypothesis. The author discusses methods of studying aggression from a strictly experimental point of view.

Chasdi, Eleanor Hollenberg and Margaret Sperry Lawrence, "Some Antecedents of Aggression and Effects of Frustration in Doll Play", in D. McClelland (ed.), Studies in Motivation, New York, Appleton-Century-Crofts, 1955, p. 517-528.

This study shows that punishment does inhibit aggression but only temporarily. It was also shown that as "aggression anxiety" increased, aggression decreased assuming that the tendency to express aggression remained constant. This study is important in that it was conducted out of the animal laboratory with children and produced encouraging results.

Dollard, John, Neal E. Miller, Leonard W. Doob, O.H. Mowrer, and Robert R. Sears, Frustration and Aggression, New Haven, Yale University Press, 1939, 1-209 p.

The original Frustration-Aggression monograph in which the attempt is made to define as accurately as possible the mechanisms of aggression. This book provides a systematic

foundation for the study of aggression and has been widely praised, as the concepts and hypotheses proposed have been used, criticized and modified.

Doob, Leonard W. and Robert R. Sears, "Factors Determining Substitute Behaviour and the Overt Expression of Aggression", in Journal of Abnormal and Social Psychology, Vol. 34, No. 3, 1939, p. 293-313.
A study with college men in which it was found that the amount of overt aggression is inversely related to the amount of punishment anticipated, thus indicating that the anticipation of punishment is also an inhibitor of the overt expression of aggression.

Estes, W.K., "An Experimental Study of Punishment", in Psychological Monographs, Vol. 57, No. 263, 1944, 44 p.
A study which showed experimentally that punishment does not eliminate behaviour, as implied by the original Frustration-Aggression hypothesis, but inhibits behaviour.

Goodenough, Florence, Anger in Young Children, Minneapolis, University of Minnesota Press, 1931, v-278 p.
One of the first attempts to study various aspects of hostile behaviour in children through the doll play technique. From this study further research was prompted which, in general, confirmed the finding that the expression of aggression decreased with chronological age.

Gordon, Jesse E. and Faye Cohn, "The Effect of Fantasy Arousal of Affiliation Drive on Doll Play Aggression", in Journal of Abnormal and Social Psychology, Vol. 66, No. 4, 1963, p. 301-307.
A study the results of which indicate that social teaching and awareness of the need for affiliation are factors which deter the expression of aggression even in young children. Thus, it seems that social teaching has an influence in inhibiting aggressive behaviour.

Graham, Frances K., Wanda A. Charwat, Alice S. Honig and Paula C. Weltz, "Aggression as a Function of the Attack and the Attacker", in Journal of Abnormal and Social Psychology, Vol. 46, 1951, p. 512-520.
In this work, it is indicated that less aggression is expressed in the presence of persons of high status and more aggression among peers. This is presumably because the anticipation of punishment from peers is less threatening to the offender.

Miller, N.E., "The Frustration-Aggression Hypothesis", in Psychological Review, Vol. 48, 1941, p. 337-342.

This article offers clarification of the implication of the original Frustration-Aggression hypothesis that aggression is a result of frustration and frustration always leads to aggression. Here Miller suggests that aggression is one of many responses on a hierarchy of response tendencies to frustration, offering a more pliable framework from which to proceed.

Sears, Pauline Snedden, "Doll Play Aggression in Normal Young Children: Influence of Sex, Age, Sibling Status, Father's Absence", in Psychological Monographs, Vol. 65, No. 6, 1951, iii-42 p.

A monograph in which various factors influencing the display of aggressive tendencies in the doll play activities of non-institutionalized children are studied. These factors are considered as influential variables in the expression and regulation of aggressive behaviour.

Sears, Robert R., "Relation of Early Socialization Experiences to Aggression in Middle Childhood", in Journal of Abnormal and Social Psychology, Vol. 63, 1961, p. 461-465.

The results of this study show that aggressive tendencies decrease with chronological age. The decrease is discussed in terms of the methods of "socialization" patterns utilized by the parents. It is shown here that punishment is one of the factors responsible and contributes to a more "socialized" child in the later childhood years.

Wagner, Edwin E., The Hand Test, Manual for Administration, Scoring and Interpretation, Akron, The Mark James Co., 1962, 1-62 p.

The manual is essential for use of The Hand Test. Not only does it give full instructions with illustrations and case histories, but summarizes the research discussed in the Bricklin, Piotrowski and Wagner monograph and presents a more recent line of thought in the use of the test.

--------, "Application of the Hand Test Indicators of Antisocial Action Tendencies in Adults to Teenage Juvenile Delinquents", unpublished speech given to the Eastern Psychological Association, Atlantic City, April 28, 1962.

The speech gives the account of the results of a particular research conducted with younger persons of about the same age level within a small age range. It was demonstrated that the test was able to distinguish significant differences between the aggressive and non-aggressive groups.

Whiting, J.W.M. and I.L. Child, Child Training and Personality, New Haven, Yale University Press, 1953, vi-353 p.

A sociological, psychological and anthropological study of child training practices of seventy-five cultures and their effects on several aspects of the developing personality. Our culture is placed in perspective and viewed as only a contributing part of world functioning. The problem of whether personality influences cultural growth or whether culture influences personality development is studied. Discussion and comparisons of cultural practices and personality development are made throughout.

APPENDIX 1

A COPY OF THE PERMISSION SLIPS USED TO OBTAIN PARENT'S CONSENT FOR TESTING

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A COPY OF THE PERMISSION SLIPS USED TO OBTAIN PARENT'S CONSENT FOR TESTING

To the Parent:

Permission has been granted by the Roman Catholic Separate School Board and by the Principal of your child's school to conduct a research programme which, when completed, will be of assistance in further planning for additional services to the pupils within the School System.

Your child's name has been included as a potential participant; but before continuing your permission is requested to allow your child to take a simple test of only eight or ten minutes duration, which will be administered to the pupils in his class during school time.

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Parent's Signature of Consent

APPENDIX 2

ABSTRACT OF

Differences in the Amount of Overt Aggression Expressed Between the Ages of 6, 9 and 13 Years as Defined by Scores on The Hand Test

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ABSTRACT OF

Differences in the Amount of Overt Aggression Expressed Between the Ages of 6, 9 and 13 Years as Defined by Scores on The Hand Test.[1]

The expression of overt aggression is not tolerated in our society and as the child grows older attempts at regulating its expression are continued. As the child gains experience, socially acceptable ways of expression are learned and utilized.

Thus, the tendency to express overt aggression should be shown to decrease with chronological age. That overt aggression does so decrease has been demonstrated by lengthy and subjective techniques with differing results.

The Hand Test, a test which reportedly estimates a tendency to express overt aggression of any kind, was utilized in this project to measure the predicted decrease.

Subjects were selected according to criteria of age, the independent variable, (six years, 6 months to 7 years; nine years, 6 months to 10 years; and twelve years 9 months to 13 years, 3 months), sex (male), intelligence (90-110 as measured by the Dominion Tests), no academic difficulty, home situation, and cultural origin. The sample was then tested.

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1 Elizabeth Cameron Foucar-Szyed, Master's thesis presented to the Faculty of Psychology and Education of the University of Ottawa, Ontario, 1966, viii-80 p.

Results indicate that although significant differences were not found between each and every age group, a general trend in the predicted direction shows that the expression of overt aggression, the dependent variable and operationally defined as selected scores and ratios (the AOR, the Aggression responses, the proportion of Aggression responses to socially acceptable responses and the proportion of Aggression responses to the total number of responses) of The Hand Test, decreases with chronological age.

Thus, attempts at inhibiting overt expression of aggression are increasingly successful with growth throughout childhood.